National Library of Canada
Bibliothèque nationale du Canada

Canadian Theses Service
Service des thèses canadiennes

Ottawa, Canada
K1A 0N4

NOTICE

The quality of this microform is heavily dependent upon the quality of the original thesis submitted for microfilming. Every effort has been made to ensure the highest quality of reproduction possible.

If pages are missing, contact the university which granted the degree.

Some pages may have indistinct print especially if the original pages were typed with a poor typewriter ribbon or if the university sent us an inferior photocopy.

Previously copyrighted materials (journal articles, published tests, etc.) are not filmed.

Reproduction in full or in part of this microform is governed by the Canadian Copyright Act, R.S.C. 1970, c. C-30.

AVIS

La qualité de cette microforme dépend grandement de la qualité de la thèse soumise au microfilmage. Nous avons tout fait pour assurer une qualité supérieure de reproduction.

S'il manque des pages, veuillez communiquer avec l'université qui a conféré le grade.

La qualité d'impression de certaines pages peut laisser à désirer, surtout si les pages originales ont été dactylographiées à l'aide d'un ruban usé ou si l'université nous a fait parvenir une photocopie de qualité inférieure.

Les documents qui font déjà l'objet d'un droit d'auteur (articles de revue, tests publiés, etc.) ne sont pas microfilmés.

La reproduction, même partielle, de cette microforme est soumise à la Loi canadienne sur le droit d'auteur, SRC 1970, c. C-30.

NL-339 (r. 88/04)

Canada

THE UNIVERSITY OF ALBERTA

SPEECH-LANGUAGE REFERRALS: INFLUENCES ON PHYSICIAN PRACTICES

BY

EVA GAY SUTHERLAND

A THESIS

SUBMITTED TO THE FACULTY OF GRADUATE STUDIES AND

RESEARCH IN PARTIAL FULFILLMENT OF THE REQUIREMENTS

FOR THE DEGREE OF MASTER OF HEALTH SERVICES

ADMINISTRATION

DEPARTMENT OF HEALTH SERVICES ADMINISTRATION AND

COMMUNITY MEDICINE

EDMONTON, ALBERTA

FALL, 1988

Permission has been granted to the National Library of Canada to microfilm this thesis and to lend or sell copies of the film.

The author (copyright owner) has reserved other publication rights, and neither the thesis nor extensive extracts from it may be printed or otherwise reproduced without his/her written permission.

L'autorisation a été accordée à la Bibliothèque nationale du Canada de microfilmer cette thèse et de prêter ou de vendre des exemplaires du film.

L'auteur (titulaire du droit d'auteur) se réserve les autres droits de publication; ni la thèse ni de longs extraits de celle-ci ne doivent être imprimés ou autrement reproduits sans son autorisation écrite.

ISBN 0-315-45737-6

THE UNIVERSITY OF ALBERTA

RELEASE FORM

NAME OF AUTHOR: EVA GAY SUTHERLAND

TITLE OF THESIS: SPEECH-LANGUAGE REFERRALS:
INFLUENCES ON PHYSICIAN PRACTICES

DEGREE: MASTER OF HEALTH SERVICES ADMINISTRATION

YEAR THIS DEGREE GRANTED: FALL, 1988

Permission is hereby granted to THE UNIVERSITY OF ALBERTA LIBRARY to reproduce single copies of this thesis and to lend or sell such copies for private, scholarly or scientific research purposes only.

The author reserves other publication rights, and neither the thesis nor extensive extracts from it may be printed or otherwise reproduced without the author's written permission.

Gay Sutherland

(STUDENT'S SIGNATURE)

10907 - 65A STREET
EDMONTON, ALBERTA
T5J 2P6
(PERMANENT ADDRESS)

DATE: Oct 13 .1988

THE UNIVERSITY OF ALBERTA

FACULTY OF GRADUATE STUDIES AND RESEARCH

The undersigned certify that they have read, and recommend to the Faculty of Graduate Studies and Research, for acceptance, a thesis entitled: SPEECH-LANGUAGE REFERRALS: INFLUENCES ON PHYSICIAN PRACTICES submitted by Eva Gay Sutherland in partial fulfillment of the requirements for the degree of MASTER OF HEALTH SERVICES ADMINISTRATION.

. . Janet L. Storch . . . . .
Supervisor

. . Paul Hagh . . . . . .

. . . . . .

DATE: . . October 13 1988

to

my family

and all my friends

without whom

life would not hold such joy

and

to Jay

my best friend of all

ABSTRACT

In the City of Edmonton, physicians play a pivotal role in the acquisition of speech-language services for preschool children. Referral figures suggest that far fewer children are referred for speech-language services than would be expected to require these services. This study was undertaken to determine if physicians who report they are most likely to refer when in doubt about a child's speech-language status differ in beliefs, knowledge and opinions from physicians who report they are most likely to wait and reassess when in doubt.

A questionnaire was developed and distributed to 115 general practitioners in the City of Edmonton. Eighty-seven questionnaires were returned representing a response rate of 77%. Of the 87 returns, 72 were considered useable, representing a completion rate of 72%.

Three items on the questionnaire were designed to divide the respondents into two groups--physicians who refer (Refer; n=39) and physicians who wait and reassess (Wait; n=7). A third group (Uncertain; n=26) also emerged. An analysis of variance was used to test for differences among the means of the three groups.

A statistically significant difference among group responses was found on the issues of (1) physicians' belief in the ability of speech-language pathologists to work with very young children; (2) physicians' belief in their knowledge of where to refer; (3) physicians' belief

in the need to be sure a speech-language problem exists before making a referral; and (4) physicians' perception of the qulity of their interaction with speech-language pathologists. In general, respondents appeared to lack knowledge on (1) the services a child and the child's family receive before the child is placed on the waiting list; and (2) the likelihood of a child outgrowing a speech-language disorder. As a group, respondents reported a high regard for the opinions of allied professionals, day care workers and preschool teachers, as well as a high regard for the concerns of parents.

Recommendations directed at institutions which provide speech-language services and recommendations specific to the speech-language professional organization were provided. Suggestions for future research were also included.

ACKNOWLEDGEMENTS

Many people assisted me in this journey from the glimmer of a research idea to the completion of a thesis.

My sincere thanks go first to my committee members. The direction, encouragement and constructive criticism provided by Dr. Jan Storch made a formidable task a positive learning experience. Dr. Paul Hagler's enthusiastic and good natured guidance will be remembered with fondness. The careful consideration and thoughtful questions of Dr. Colin Soskolne were valuable to the completion of my thesis.

The development and refinement of the questionnaire was greatly assisted by input from members of the Department of Speech Pathology and Audiology at University Hospital; the Speech Pathology Unit and the Medical Unit at the Edmonton Board of Health.

I am blessed to have such friends as Karen Vena, Liz Webster, Sharon Black, Betty Sibley, Frances Floyd and Orville Fifield. They were an unending source of encouragement and comfort. Special mention too must go to Gwen Fipke for her assistance and friendship.

My love and gratitude go to my parents who taught me how to succeed through hard work and perseverance.

Lastly, words cannot express what it has meant to have Jay's support and enduring love throughout my academic endeavors.

TABLE OF CONTENTS

	Page
DEDICATION	iv
ABSTRACT	v
ACKNOWLEDGEMENTS	vii
TABLE OF CONTENTS	viii
LIST OF TABLES	xii
CHAPTER	
I. INTRODUCTION	1
Background	1
Statement of the Problem	5
Goal of the Study	7
Objectives	7
Justification	9
Organization of the Thesis	9
II. REVIEW OF THE LITERATURE	11
Introduction	11
Prevalence of Speech-Language Disorders of Preschoolers	12
Problems in Estimation	12

Prevalence of Speech-Language Disorders 15
Summary 20
Early Intervention Studies 22
Target Population 22
Nature of Early Intervention 23
Rationale for Early Intervention . . . 24
Summary 26
Effectiveness of Early Intervention . . 26
Summary 31
Referral Process--Physician to Physician. 33
Referral Process--Physician to Non-Physician 34
Role of the Physician 38
The Physician as Diagnostician 41
Physicians and the Rehabilitation Professions 44
Role of the Parent 49
Knowledge of Community 50
Summary of Literature Review 51

III. METHODOLOGY 53

Design 53
Subjects 53
Sample Size 54
Sample Selection 55

Questionnaire Design 56
Pre-Test and Pilot Study 57
Strategies 58
Questionnaire Mailing 59
Statistical Methods 61
Assumptions and Limitations 63
Summary 64

IV. ANALYSIS AND RESULTS 65

Survey Response Rate 65
Respondent Grouping 66
Data Preparation 68
Analysis and Results of Survey Statements 69
Analysis of Variance 71
Summary 82

V. CONCLUSIONS AND RECOMMENDATIONS 84

Summary of the Study 84
Results and Discussion 85
Conclusions 97
Recommendations 100
Suggestions for Future Research 102

REFERENCES 104

APPENDIX A: Questionnaire on Physician Speech-Language Referral Practices . . . 124

APPENDIX B: Cover Letter--Pretest . . . 127

APPENDIX C: Preletter 129

APPENDIX D: Cover Letter 131

APPENDIX E: Cover Letter--First Follow-up 133

APPENDIX F: Cover Letter--Second Follow-up 135

LIST OF TABLES

Table		Page
I	Estimates of Actual Referrals Compared to Expected Referrals	5
II	Summary of Estimates of Prevalence of Speech and Language Disorders of 3, 4 and 5 year olds	21
III	Profile of Uncertain Group	67
IV	Means and Medians of Dependent Variables across Groups	70
V	Analysis of Variance: Age of Child . . .	72
VI	Analysis of Variance: Status of Waiting List	73
VII	Analysis of Variance: Opinions of Allied Professionals	74
VIII	Analysis of Variance: Concerns of Parents	74
IX	Analysis of Variance: Quality of Interaction	76
X	Analysis of Variance: Be Certain of Disorder	77
XI	Analysis of Variance: Need for Speech Sample	78
XII	Analysis of Variance: Where to Refer . .	79
XIII	Analysis of Variance: Will Outgrow Disorder	80
XIV	Analysis of Variance: Availability . . .	80
XV	Type of Practice of All Respondents and of Physicians who Refer	81

Chapter I

INTRODUCTION

Background

All sectors of the Canadian health care system are facing financial restraint. At the same time, once services have been made available, there is a public expectation that quantity will expand as needed, quality will keep pace with technology, and access to care will be unhampered. To respond to the challenge to provide the best possible health care with diminished resources, effective and efficient delivery of programs must be ensured.

One service that has been provided through a variety of agencies in the City of Edmonton is treatment for speech-language disorders. The treatment of speech-language disorders is critical to the optimal development of the individual, because we live in a society in which great significance is attached to verbal communication at an early age. When communication is defective, the penalties imposed by society are far reaching, affecting emotional development, interpersonal relations, and occupational opportunities.

Speech-language service in the City of Edmonton is an area of health care subject to increasing pressure to

provide more service with shrinking resources: waiting lists grow while staff positions are frozen or cut back. Thus, in the late 1980's, the goal of providing adequate service to everyone on the waiting list is not attainable. An alternative, more realistic, goal must be established--provision of satisfactory, timely service to that population which will benefit the most. To accomplish this, the population must be identified and any barriers to their timely access to treatment removed.

The preschool population is considered a priority population likely to benefit from early intervention services. The earliest possible treatment of speech-language disorders will not only reduce the penalties experienced by the individual, but will also reduce or avoid the development of detrimental compensatory behaviours. The preschool population may be broadly thought of as composed of three subgroups: (1) those with a speech-language disorder secondary to another handicapping condition, (2) those with only a speech-language disorder, and (3) those without a speech-language disorder. Since those with other handicapping conditions are more likely to be referred, and those without speech-language disorders need no referral, only the second group is considered in this study.

The prevalence of speech-language disorders in the entire population is generally regarded to be 10% (Boone, 1987). Estimates of prevalence of speech-language disorders among preschoolers range from a low of 4.6% (Beitchman, Nair, Clegg & Patel, 1986) to a high of 36% (Williams, Darbyshire & Vaghy, 1980). Given the wide range of estimates of prevalence, it is difficult to estimate the extent of the problem in Edmonton. Even a conservative (ie. low) estimate of 5% indicates that 2,767 preschoolers would be in need of speech-language services in Edmonton. In 1987, 55,356 preschoolers (5 years of age and younger) lived in the City of Edmonton (City of Edmonton Census, 1987). During that same year, approximately 676 preschoolers were referred for speech-language services in the City of Edmonton (J. Branch, Department of Speech Pathology and Audiology, University of Alberta Hospitals, personal communication, February 15, 1988; A. M. Long, Department of Communication Disorders, Glenrose Hospital, personal communication, February 5, 1988; J. Graham, Department of Speech Pathology, Edmonton Board of Health, personal communication, February 25, 1988). This suggests that more than 2000 preschool children who would be expected to require speech-language services were not referred. In Table 1 the actual number of referrals of preschoolers for speech-language services are compared to the expected

number of referrals. Further, if one accepts that the younger portion of the preschool group would benefit optimally from speech-language services, then children 3 years of age and younger would be targeted. Of the total preschool population, 38,013 were 3 years of age and younger. Applying an estimate of 5%, 1,900 would be expected to require speech-language services. Of those 676 referrals, approximately 40% (270) were age 3 and under (J. Branch, personal communication; A. M. Long, personal communication; J. Graham, personal communication). That is, 24% of preschoolers 5 years of age and under who would be expected to require speech-langauge services were referred: 14% of preschoolers 3 years of age and under who would be expected to require speech-language services were referred. Among the estimated 2000 children who were not referred were the youngest speech-language disordered children--those most likely to benefit optimally from speech-language services (Adler, 1986).

Table 1

Estimates of Actual Referrals

Compared to Expected Referrals

Preschoolers 5 years and under		Preschoolers 3 years and under	
Total pop. 1987	55,356	Total pop. 1987	38,013
Expected ref.(5%)	2,767	Expected ref.(5%)	1,900
Actual ref.	676	Actual ref.	270
% referred	24%	% referred	14%

One of the expectations of the Medical Care Act was that "it established, in principle, the right to equal access to health care for the Canadian people" (Storch, 1982, p.119). If, as Donabedian (1972) points out, "The proof of access is use of service, not simply the presence of a facility" (p.111), then the fact that fewer than one third of the children expected to require speech-language services are seen by speech-language pathologists suggests that there is likely a barrier to accessing services.

Statement of the Problem

In the City of Edmonton, speech-language services to preschool children are initiated, in most cases, only after receipt of a letter of referral from a physician.

Awareness of the need for a referral to a speech-language pathologist may evolve in one of three ways: (1) the parent may observe that the child is not developing speech and/or language at an acceptable rate and take the child to the physician, the parent may be advised by some other person (friend, neighbor, day care worker, or public health nurse) who has observed the child of the possible need for a speech-language consultation and urged the parent to see a physician, and (3) the child's physician may question, during the course of an office visit, the child's speech-language development and suggest a referral. Whichever path is taken, all have a common step--the requirement to cycle the referral through the physician.

For a referral to occur, the physician must believe that the child and/or the child's family would benefit from the referral. That is, a referral would generally follow from two possible situations: (a) the physician perceives the existence or possible existence of a speech-language disorder that can be alleviated by a speech-language pathologist or (2) the physician perceives that there is not a speech-language disorder but that the parent would benefit from speech-language counselling. These conditions should account for the preschool referrals that occur. This would imply that any beliefs or practices that interfere with the

assessment of the child's speech-language status or the perception of the potential for benefit would obstruct a referral. It is suggested here that the preschool group, particularly the younger members of that group, is likely to consist of children whose speech-language status is not easily established and that misbeliefs about the speech-language profession and its practices may delay or deter a referral. The small number of actual referrals, as compared to the number of expected referrals, suggests that deterrents to referral exist.

Goal of the Study

The goal of this study was to determine what differences exist in beliefs, opinions and knowledge between physicians who are most likely to refer when in doubt about a child's speech-language status and physicians who are most likely to wait and reassess.

Objectives

The objectives of this study were to determine:

1. the proportion of physicians surveyed who are most likely to refer a child whose speech-language status is unclear (those who refer);
2. the proportion of physicians surveyed who are more likely to take a wait and see approach with a child whose speech-language status is unclear (those who do not refer);

3. if those who refer and those who do not refer differ in,

   a. their beliefs regarding speech-language pathologists' ability to help young children,

   b. their understanding of the status of the waiting lists,

   c. the value they place on the opinions of allied professionals, preschool teachers and day care workers,

   d. the value they place on the concerns of parents,

   e. the perceived quality of their experience with speech-language pathologists,

   f. the belief that they must ascertain the presence of a speech-language disorder before making a referral,

   g. their use of a speech-language sample as a basis for referral,

   h. their perception of their knowledge about where to refer a child for speech-language services,

   i. the belief that a child is likely to outgrow a speech-language disorder,

   j. their perception of the availability of speech-language services,

4. the type of medical practice that has the largest number of physicians who are likely to refer;

5. if there is a relationship between the place of education of physicians who refer and their type of medical practice;
6. if recent graduates will have among them more physicians who refer than previous graduates; and
7. if physicians who generally refer when uncertain of a diagnosis are more likely to refer or not to refer when uncertain of a speech-language diagnosis.

Justification

In considering the provision of a limited service, the group that would benefit most must be identified. Barriers to their timely receipt of service must be detected and removed if the goal of effective and efficient provision of service is to be achieved. In the case of speech-language programs, targeting the younger members of the preschool group ensures better use of clinical resources and intervention at the optimum learning time for the child (Dale, 1976; Adler, 1986).

Because physicians play a pivotal role in the referral system, information about their beliefs and practices is essential to addressing this problem of the paucity of referrals of preschool children.

Organization of the Thesis

This thesis is comprised of five chapters. In this first chapter the introductory material was provided.

Chapter II presents a review of the literature as it relates to the rationale for this study and determination of the issues to be addressed through the survey instrument. In Chapter III, the methodology is described. Results are presented in Chapter IV. The final chapter contains the conclusions and recommendations. Appendices include the survey form and the various letters that preceded and accompanied it.

Chapter II

REVIEW OF THE LITERATURE

Introduction

The purpose of this literature review is twofold: (1) to establish the rationale for investigating deterrants to early referral of speech-language disorders, and (2) to provide a basis for the issues selected for investigation through the survey instrument.

In order to justify emphasis on early detection and referral, a disorder must occur often enough to make it practical to expend the effort required, and it must be remediable at the early stages. Thus Section I of this review of the literature will include studies of the prevalence of speech-language disorders in the preschool population and studies on the efficacy of early intervention to determine if speech-language disorders fit this framework.

Since the literature was also reviewed to determine the points to be addressed in the survey instrument, Section II of this chapter examines literature on physician, patient and community variables to discover which of these come to play in a physician's decision to refer a preschool child for a possible speech-language disorder.

Section I

Prevalence of Speech-Language Disorders of Preschoolers

Problems in Estimation and in Making Comparisons

Determination of the prevalence of speech and language disorders has challenged researchers for decades. Despite nearly eighty years of investigation, however, estimates of the occurrence of these disorders remain unreliable.

Several factors contribute to this lack of reliable data. First, prevalence varies with the population under study and cannot be generalized beyond that population. Age, for example, has a great effect on prevalence, with higher prevalence found in the youngest and oldest age groups (Beitchman, Nair, Clegg, & Patel, 1986; Leske, 1981). Reported prevalence that is based on broad population age groups thus is less meaningful than age specific prevalence. The existence of certain other conditions (e.g., cerebral palsy or mental retardation) will significantly increase the prevalence. Elliott (1978) pointed out that were one interested in estimating the prevalence of speech-language disorders coexistent with another disorder, sampling difficulties would be encountered due to the likelihood of some of these individuals residing in special schools or institutions.

The use of unqualified and often untrained staff is another barrier to the accumulation of accurate data. Earlier studies, in particular, relied on the judgements of physicians, teachers, and parents. Not only is it likely that these individuals would be unaware of how to detect any but the most obvious of speech-language disorders, but each profession is subject to its own biases. Beitchman, et al. (1986), for example, suggested that since "teachers were aware of which students were having school problems, they may have more readily identified those students as having speech and language difficulties" (p. 99).

Several researchers (e.g., Beitchman, et al., 1986) identified a third area of concern : the need for a comprehensive classification system for speech and language disorders. The grouping of disorders with different features, causes and levels of severity does not provide particularly useful information.

Related to the above are several other points relevant to the interpretation of estimates. The factor to be assessed is one of degree rather than the presence or absence of a disorder. Tests of language skills are designed to measure the child's ability on one or several discreet aspects of language. No test can sample all aspects of language and those that are included will not be tested in depth. Hence, an

estimate of prevalence based on children's performance on one test may differ from an estimate of prevalence from performance on a different test. A child's test performance is often transformed to a score to be compared with established age norms. However, Lloyd (1977) points out that both the mean and the standard deviation must be considered when norms are used. Setting a cut-off point as one standard deviation instead of two would result in quite a different estimate of prevalence. Further, the interpretation of a child's score as a mild, moderate or severe language disorder can be quite subjective. Investigations of prevalence will thus be effected by the test used, the cut-off point chosen, and the interpretation of the child's score.

Notwithstanding the issues discussed above, the prevalence studies that exist provide a guide to the size of the speech-language disordered population. The following review of the literature will concentrate on those studies where preschoolers were investigated. As no studies of this age group dated before 1970 were found, this necessarily limits the discussion to the last eighteen years. This time frame encapsulates the development and refinement of diagnostic tests applicable to this younger population. The central theme of this literature review will be prevalence

studies of speech and language disorders of preschoolers with no other known disorder. Studies investigating speech-language disorders secondary to another disorder will warrant only brief mention.

Prevalence of Speech-Language Disorders

Three-year-old group. Among the preschool group, three year old children with speech-language disorders were the youngest age group reported in the literature. Randall, Reynell and Curwen (1974) assessed the language abilities, IQ and articulation skills of 176 three year old children. Two aspects of their sample selection suggested this group would not be considered representative: (1) children from "immigrant families" were excluded because they "did poorly on assessment scales" (p. 4) and (2) the authors reported that the sample children were from a higher socioeconomic level than the norm. The authors concluded that approximately 1% to 7% of three year olds in the London, England suburb exhibited some degree of speech-language disorder, dependent on the level of delay considered problematic.

In another British study in 1976, fifty-three three year olds were assessed for the presence of a speech-language disorder. Bax and Hart (1976) noted that the area (Camden) contained a "very different

population" from other areas around London. A children's hospital, a handicapped children's centre, and a medical school were all located within the investigative boundaries. The presence of these institutions would likely be a consideration when families of handicapped children chose their residence. The conclusion, that 15 percent of the children tested exhibited a speech-language disorder, would suggest an atypical sample. This was the highest rate reported in the literature for this age group. The authors provided little information about the method of testing, except that a physician was required to determine whether a particular aspect of a child's development was 'definitely' or 'possibly' abnormal.

In another suburb of London, 705 three year old children were assessed for expressive language skills (Stevenson & Richman, 1976). The authors screened the subjects for behavior problems and language delay. They concluded that 5.7 per 1000 exhibited a "specific language delay not associated with general retardation" (p. 18). Comprehension of language was not measured. This estimate is low as compared to other estimates reviewed here. This may be due to the fact that measures of speech have not been included and only one aspect of language was measured.

Nine hundred and thirty-two three-year-olds were included in a study in New Zealand in 1980. Silva (1980) chose as subjects all infants born at one maternity hospital. They tended to be socio-economically advantaged as compared with the country as a whole. The conclusion that 8.4 percent exhibited either a comprehension or expression delay or both could thus be considered an underestimation of the prevalence in the whole population of three-year-olds.

Leske (1981) compiled a report of prevalence estimates of communicative disorders in the U.S. The conclusion was that "language impairment is present in two to three percent of three-year-old children" (p. 232).

Four-year-old group. Only two studies were located that considered speech-language development of four-year-olds. Williams, Darbyshire and Vaghy (1980) reported on 530 children in southern Ontario aged 18 months to five years. They divided this group into four-year-olds, less than four, and more than four and assessed their speech and language development. Although the findings were reported as mild, moderate or severe, speech and language difficulties were reported as one disorder. Nineteen percent of the under four-year-olds, 36 percent of the four-year-olds,

and 45 percent of the over four-year-olds were labelled as displaying a speech-language disorder.

Bax, et al. (1976) followed the sample of three-year-olds and reassessed them at four and a half years. As reported above, the assessment appeared to relay on the judgement of a physician. Notwithstanding the discovery that by four and a half the percent of speech-language disordered children had decreased from 15% to 5%. Bax, et al. (1976) reported this with the qualifier that the literature suggested that delayed three-year-olds may "catch up" by age four and a half, but are "likely to present with another neurodevelopmental problem, namely delay in learning to read" (p. 851).

Five-year-old group The kindergarten age group has been subject to a greater number of investigations where speech and language development have been assessed and reported separately. Tuomi and Ivanoff (1977) investigated 220 kindergarten children. They began their investigation by using an informal, subjective screening to identify children suspected of a speech-language disorder. They judged 20.5% of the kindergarten children to be delayed in articulation abilities; approximately seven percent were delayed in language development. They acknowledged that because

the screening was not standardized, it would be difficult to be confident of their results.

In a study of 1,598 kindergarten children in Ottawa-Carleton (Beitchman, et al., 1986), the children were initially screened for speech and language difficulties. Those who failed the screening were then subjected to more intensive testing. Three hundred and one children underwent the second testing. The authors provide a detailed description of the tests and the criteria used for determining speech and /or language impairment. Eight percent exhibited a language-only disorder; 6.4 percent exhibited a speech-only disorder, and 4.6 percent exhibited both a speech and a language disorder.

Children with other Handicapping Conditions. Few studies were found which looked at the speech-language development of preschoolers with specific other handicapping conditions. Most investigations considered the handicapped population as a whole. Fitzhardinge and Ramsay (1973) followed 39 infants who had been born prematurely at a Montreal hospital. At five years of age, 65% of the males and 33% of the females had "abnormal speech". In a study of 216 mentally handicapped people (children and adults) only 12% were judged to have "speech that could be considered normal" (Sheehan, Martyn, & Kilburn, 1968,

p. 255). Enderby and Phillipp (1986) reported that 55% of mentally handicapped people would exhibit a speech or language problem. These researchers also suggested that 60% of the population with cerebral palsy would have speech or language problems. A Swedish study reported this figure as 33% (Lagergven, 1970).

Summary

The available research on the prevalence of speech-language disorders in preschool children covers a broad range of estimates. The issues relevant to these investigations--the age of the population, the use of unqualified staff, the lack of a comprehensive classification system, and the lack of a standard criterion--have not always been adequately addressed.

In the studies of three-year-olds, reported prevalence of delayed or disordered language development extended from one percent (Randall et al., 1974) to 8.4 percent (Silva, 1980). The estimate for speech and language disorders together was 15 percent (Bax & Hait, 1976). Among four-year-olds, 36 percent were judged to be speech and language delayed (Williams et al., 1980). The estimates for prevalence for five-year-olds were more often reported separately for speech and language disorders. Prevalence of speech disorders only was determined to range from 6.4 percent

(Beitchman, et al, 1986) to 20 percent (Tuomi & Ivanoff, 1977). Prevalence of language disorders only ranged from 7% percent (Tuomi & Ivanoff, 1977) to 8% (Beitchman, et al, 1986). The prevalence of the two disorders together was reported as 4.6 percent (Beitchman, et al, 1986).

Table I

Summary of estimates of prevalence of speech and language disorders of 3, 4 and 5 year olds. Only low and high end of range given.

	Prevalence Estimates				
	Speech		Language		Both
Age	Low	High	Low	High	
3	---	---	1%	8.4%	15%
4	---	---	---	---	36%
5	6.4%	20%	7%	8%	4.6%

--- = not given

Despite the wide variation in the reported prevalence estimates, the figures suggest that speech and language disorders constitute a significant problem, particularly in the preschool population. When populations with other handicapping conditions

(such as cerebral palsy or mental retardation) are examined, the prevalence estimates of speech and language disorders are double to triple those of the population of preschoolers without other handicapping conditions.

Early Intervention Studies

Target Population

Three specific groups of infants and children make up the target population for early intervention programs. They are (a) those at increased environmental risk, (b) those at increased biological risk, and (c) those with established developmental delays, deviations, or diabilities (Guralnick & Bennett, 1987). Children at environmental risk are biologically sound but their early life experiences are limited. Increased environmental risk may be the result of poverty, low socioeconomic status, a single parent family, an adolescent mother or other factors which could restrict the family care, health care and "patterns of physical and social stimulation" to the extent that there is a high probability of delayed development (Tjossem, 1976, p. 5). Children presenting a history of prenatal, perinatal, neonatal and early development suggestive of biological insult to the central nervous system are included in the group

defined as being at biological risk. Children with established risk are those whose "early appearing aberrant development is related to diagnosed medical disorders" (Tjossem, 1976, p. 5). These categories are not mutually exclusive and may interact to increase the probability of disrupted development. Further, a child may display delayed development without it necessarily being apparent that environmental, biological or established risk were the operants.

Nature of Early Intervention

Early intervention is systematic intervention carried out in infancy or early childhood (Simeonsson, Cooper, & Scheiner, 1982) through which environmental or experiential factors are manipulated (Guralnick & Bennett, 1987). Typically, early intervention involves physical, occupational and/or speech therapy. Broader programs combining physical or social stimulation with these traditional therapies also exist (Simeonsson et al., 1982).

Early intervention directed at children and infants considered to be at environmental or biological risk have a secondary prevention orientation. Tertiary prevention activities are directed at those children and infants with an established developmental disorder.

These activities are aimed at averting or diminishing the effects of the disorder.

Rationale for Early Intervention

General. Advancements in understanding the variables that affect early development of normal children have provided the rationale for early intervention. Developmental psychologists in the 1950s and 1960s discovered that infants processed information and actively participated in their own development. It was believed that a significant portion of intellectual ability was determined by four years of age. Psychoanalytic endeavors focused on the impact early experience had on later social and personality development. The role of the caregiver and the nature of the infant-parent interaction were also determined to impact on the child's growth and development (Beckwith, 1976; Eisenberg, 1987; Guralnick & Bennett, 1987; Mussen, 1963). More recent research has extended these original views. The relationship between early environmental factors and developmental outcome has been demonstrated. Parental charcteristics such as expression of warmth, sensitivity, and verbal interactions have all been found to be associated with a child's development (Guralnick & Bennett, 1987). Not only was the nature of the child's early experience

implicated in the developmental outcome, but the timing of the early experience has also received much attention (Ruben, 1986). Connolly (1972) pointed out that "certain periods in an organism's life history appear to be specifically sensitive for the development of certain behaviors" (p. 712).

Early Intervention and Speech-Language Disorders. The importance of a critical period in a child's general development is paralleled by a critical period for the optimal development of speech and language. Various researchers suggested that this critical period encompassed the first two years of life (Lloyd, 1976; Ruben, 1986; Weiss & Lillywhite, 1981). Adler (1986) emphasized that in order to maximize the potential of speech-language disordered children, the remedial program should be initiated "while their brains are still capable of much growth and development" (p. xi). This would be during the first 18 months of life. Lloyd (1976) stated that the first two years are critical years for language learning and that "the first year is the most critical" (p.199). Crystal (1973) stated that it was the first year of life that was the most critical for language learning. Recognizing that a goal of identifying and treating all speech-language disordered children at or before their second birthday was impossible, Provence (1981) stated

the goal as "the earliest possible recognition of risk factors and vulnerability, and the mobilization of services that are likely to provide the most effective means of alleviating problems and reducing the possibility of further disturbance and impairment of development" (p. 252).

Summary

There has been growing evidence that there is great potential for influencing early development by correcting speech-language disorders before age 4. Rutter (1982) summarized the view of the early interventionists with the statement that "intervention that is provided early is likely to have the most profound impact" (p. 801). Eisenberg (1987) put this thought most succinctly "Children do not keep. They are exquisitely sensitive to time" (p. 420).

Effectiveness of Early Intervention

General. The evaluation of the effectiveness of early intervention has been the subject of many studies over the past 25 years. In particular, programs for children considered environmentally at risk have received attention and provide most of the information on the effectiveness of early intervention. Bryand & Ramey (1987) reviewed 17 studies of programs for environmentally at risk children. These programs

covered a wide range of activities. All included specific educational activities designed to teach the child or infant certain concepts or skills, such as gross motor, language, or social behaviour. Curricula for parents was also included in many of the programs. In some cases this was focused on encouraging greater parent involvement in the child's development; others were directed at development of parenting skills, problem solving or general life skills. Measurement of IQ was the main evaluative method employed. Based on the positive change exhibited, the existence of these programs provided support for the belief that early experience was important for optimal development. The researchers suggested that the primary function of early education was not so much to enhance early intellect, but to prevent or slow decline. Two of the studies reviewed provided long-term follow-up of the children they served. The young adults who had been in the education programs were more often employed, less likely to have repeated a grade, had higher incomes, were more satisfied with their work and made less use of welfare benefits than the control group.

Simonsson et al. (1982) undertook a similar analysis of programs directed at children with established risk. These programs included populations with Down syndrome, mental retardation, multiple

handicap, and cerebral palsy. A review of 27 studies led them to the conclusion that "in spite of limitations from the standpoint of scientific criteria, the research does provide qualified support for the effectiveness of early intervention" (p. 638).

These authors highlighted several issues pertinent to the evaluation of early intervention programs. Critics of early intervention programs have suggested that, although they caused gains in IQ, these gains diminished once the child left the special program. Few of the studies provided follow-up to counter this criticism. Many of the gains may not have been measured, or, indeed, measurable. For example, improvement may have occurred in family or sibling adjustment which may not have been specifically targeted and thus not measured. Children with developmental delays or disabilities, or children at environmental or biological risk for disability are a heterogeneous group and thus to try to show effectiveness on a group basis may be misleading. Guralnick and Bennett (1987) pointed out that the evaluation of impact for the most part has been based on 'first generation' early intervention programs. That is, many evaluations are of programs in which curricula were still being written and tested, procedures were being devised, and interdisciplinary

teams were being developed. Future evaluations will be of more mature planned programs.

Speech-Language Disorders

Effectiveness of Speech Therapy. The review of studies of the effectiveness of treatment programs for speech disorders included only those in which preschool children were involved in direct therapy in a clinic setting. In many of these studies, parents were involved in generalization or carryover sessions. A small sample size (mean N=7) was characteristic of these studies. All reported significant gains after treatment. The largest undertaking was with a group of 20 children between four and seven years of age (Carrier, 1970). They were divided into experimental and control groups and matched for age and type and severity of disorder. The experimental group showed a statistically significant improvement. A slightly older group of children (mean age 5.8) received treatment over 13 sessions. Again, pre and post measures indicated significant gains were realized (Costello & Bosler, 1976). Costello & Onstine (1976) used a distinctive feature approach with two four year olds. They found that not only were both subjects successful in treatment, but the training generalized to untrained sounds with the same distinctive features.

Overall, researchers using such diverse treatment methods as theraplay (Kuppermann, Bligh & Goodban, 1980), oral myofunctional therapy with articulation therapy (Christensen & Hanson, 1981), distinctive feature therapy (Ruder & Bunce, 1981) and behavioural therapy (Shelton, Johnson, Willis & Arndt, 1975; Weiner, 1981) all demonstrated significant gains with specific sound training.

Effectiveness of Language Therapy. Language therapy with preschoolers may take the form of a narrow focus directed at the acquisition of specific expressive language skills or a more general attempt to increase overall levels of comprehension and expression. Specific language skills chosen for treatment have included copulas, auxiliaries, pronouns, modals, irregular past tense and possessives (Culatta & Horn, 1982; Hedge & Gierut, 1979; Hedge, Noll & Pecora, 1979). In all of these studies, subjects were reported to have achieved criterion level on all rules trained. Cooper, Moodley & Reynell (1979) used a structured program to increase receptive and expressive language skills. Two groups of children were targeted, one received treatment in a clinic, the other at home with a parent. The best results were for the clinic based group, although the home based group showed acceptable improvement at posttest. Two of the youngest groups

studied were mean age 33 months (Olswang, Bain, Dunn & Cooper, 1983) and mean age 38 months (Warren, McQuarter & Rogers-Warren, 1984). Both used a behavioural structured approach to increase production of one and two word utterances. Successful achievement of criterion was reported for both studies. One study focused on the teaching of 'wh' questions to a group of children aged 3.8 years to 8.2 years (Wilcox & Leonard, 1978). They reported significant gains on trained constructions with some generalization to other structures.

Some difficulties, however, existed with these studies. Often the sample size was small and the extent of the disorder was not always described. Few researchers reported on the generalization of trained skills or the maintenance of treatment effects over time. In spite of these limitations the published data on early intervention for children with speech and language delays or disorders tends to support the conclusion that intervention is effective.

Summary

The overwhelming conclusion from studies of general early intervention programs and specific speech-language programs is that they provide qualified support for the effectiveness of early intervention.

Many issues, however, remain to be resolved. The long term effects of early stimulation programs and the generalization of specific skills are important areas in which information is lacking. Despite these concerns, Eisenberg (1987) pointed out that "measurement by distant outcome places a terrible burden of proof on childhood interventions" (p. 420).

Section II

Referral Process--Physician to Physician

One of the ways that physicians provide health care to their patients is through referral to other physicians and specialists (Brock, 1977). Hines and Curry (1978) pointed out that "consultation between physicians during patient care is as old as medicine itself" (p. 1065). The process of referral is a function of patient, physician and community variables (Brock, 1977; Shortell & Anderson, 1971). Patient variables have received the most attention. Researchers have looked at age, sex, socioeconomic status and personality characteristics of patients (Penchansky & Fox, 1970). Patient initiation of referral has also been examined. Over twenty years ago Williams et al. (1960) determined that almost 50% of referrals were patient initiated; Carson (1982) reported 20% of referrals as patient initiated.

Physician variables have received limited consideration. Rates and patterns of physicians' referral have been the most popular areas of investigation (Brock, 1977; Geyman, Brown, & Rivers, 1976; Metcalfe & Sischy, 1974). Through the early seventies reported referral rates ranged from 1.6% (Geyman et al., 1976) to a rate of 2.2% (Metcalfe et al.,

1974). More recent investigators have reported rates of 5.3% in Canada (Hines & Curry, 1978) and 5.4% in Great Britain (Cummins, Jarman, & White, 1981). No difference was found between the referral rates of physicians practicing in urban, suburban, and rural settings (Geyman et.al., 1976). Brock (1977) examined reasons for referral. The most frequently chosen reasons for referral were to obtain a second opinion for management (first choice, 72%) and due to a lack of required facilities and/or skill (second choice, 62%). Ludke (1982) investigated the factors physicians consider when faced with the need to refer a patient. Results indicated that knowledge of the consultant, the attitudes of the local medical community and patient expectations for referral all played a role in the referral process.

Referral Process--Physician to Nonphysician

The above studies were investigations of physician referral to other physicians. With the more recent emphasis on detection and intervention of developmental disorders and the development and maturity of a range of allied health care professions, physicians are likely to be faced with referring to nonphysician specialists. In the case of developmental disorders, the physician, through his role of providing continuity of care, is advantageously positioned to identify a child in need of

follow up and referral (Bryant, 1986; Guralnick, 1982; Predy & Meintzer, 1982; Tjossem, 1976). Esposito (1978) stated that the physician's "ability to detect disorders in early infancy, coupled with his views on early intervention, will determine the type and extent of treatment provided" (p. 160). Parents rely on the physician to determine the needs of their child and to provide information about available services (Day & Klein, 1986; Gottlieb & Williams, 1987).

Research and clinical experience suggest that the physician may not always be the best equipped to detect some developmental disorders. For example, Horton (1976) reported that in only 7 percent of cases of hearing-impaired infants examined was the physician the first to suspect reduced hearing. Hovind & Parving (1987) studied 21 hearing impaired children and their families. In 57% of the cases, family members were the first to suspect a hearing impairment. In two studies of a service centre for infants with cerebral palsy it was determined that many more early referrals were made by health nurses and social workers than by physicians (De la cruz, 1976; Haynes, 1976). In a study of referral to mental health specialists, Costello (1986) reported that physicians "identified only half of the children with mental health problems and referred only half of these" (p. 1050). Palfrey, Singer, Walker and Butler (1987)

determined that only 44% of hyperactive children and "less than 25% of speech impairments, emotional problems, learning disabilities and 'other' developmental problems" were diagnosed by physicians (p. 654). Glascoe and VanDervoort (1985) investigated physician referral of children with developmental disorders. While children found to be mentally retarded were generally referred at a young age, children with other handicapping conditions such as learning disabilities and speech-language disorders were referred much later and in fewer numbers. In a study of referral practices by paediatricians of young mentally retarded children, Goodman and Cecil (1987) determined that physicians were most likely to refer moderately to severely retarded children. Mildly involved children were not referred, even when the delay was apparent to the physician and he professed belief in early intervention. The authors explained that while the physicians supported early intervention, physicians appeared to believe its main value was in improving parental understanding and the child's social adjustment and learning ability; only 27% believed it would elevate IQ. In one article (Hassard & LeBlanc, 1972) guidelines for the referral of patients with communicative disorders were presented . These physicians recommended referral in the first 2 or 3 years of life and made special reference to careful monitoring of 'high-risk' infants

for signs of the need for referral. They concluded by pointing out that the physician continues to be "the hub of all the variant spokes in the wheel of rehabilitation" (p. 105). Brogan (1981) studied physician referral of patients for rehabilitation services. It was concluded that "physicians probably do not recognize the extent to which their patients need rehabilitiation services and . . . may not adequately refer" (p. 219). A survey of paediatricians revealed that they perceived their training in developmental issues to be inadequate (Dworkin, Shonkoff, Leviton & Levine, 1979).

Referral to nonphysician specialists is a relatively new occurrence for physicians. These disciplines have advanced in recent years in their ability to provide treatment programs to very young children. Physicians may not be aware of these advancements. Lack of knowledge of nonphysician specialists, the need to build trust in the other profession(s) (Cubelli, 1970), and the personal adjustment the physician has to make to his traditional role are all likely to be complicating factors in the referral process. Cubelli (1970) explains that a referral is akin to a request for help and that this may be particularly "painful" for a physician. That is, the referral process complicates the physician's independent position by forcing the physician to admit that help is needed. The following review of the

literature will discuss the physician, patient and community variables that come to play when the physician referral is to a nonphysician specialist.

Role of the physician

Changing Role

Impetus for change. The issues involved in the early identification of child health and development problems were discussed by many authors in the context of the changing role of the primary care physician (Committee on Standards of Child Health Care, 1977; Drillien & Drummond, 1983; Frankenburg, 1984; Hester, 1981; Report of a Working Party, 1982). The most dramatic of these changes took place in the latter half of the twentieth century. Early in the twentieth century the medical profession had emerged as the dominant group in the health care arena. Physicians had successfully guaranteed control over their work, eliminated competition, established authority over other occupations, assured the standardization of medical education and socialization, and achieved internal unity (Coburn, Torrance & Kaufert, 1983). By the end of World War I, hospitals were becoming "doctor's workshops" (Coburn, et al., 1983). There, treatment of infectious and nutritional diseases was the primary focus of the physician's work.

By the mid-twentieth century, scientific advances were beginning to effect a change in the physician's caseload. The introduction of penicillin and the administration of vaccinations substantially reduced the number of patients seen for infectious diseases. By the late 1950s, "most paediatricians were spending more than 50% of their time in wellchild care" (Nadler & Evans, 1987, p. 21). Technical advances through the 1960s and 1970s further changed the face of medicine. Life could now be sustained in low birth weight infants who would have died decades earlier. Consequently, the past emphasis on the treatment of diseases has been replaced by attention to child development and the problems of chronic handicapping conditions (Accardo & Capute, 1979; Drillien & Durmmond, 1983; Frankenburg, 1984; Landman, 1986). The result has been that, not only are there fewer children affected by infectious diseases, but there are far more children born 'at high risk' for health and developmental problems (Casey, Bradley, Caldwell, & Edwards, 1986). Haggerty (1974) observed that:

> The current major health problems of children as seen by the community would have barely been mentioned a generation ago. Learning disabilities, visual problems, behavior disturbances, speech difficulties, allergies and the problems of adolescents in coping and

adjusting are today the most common concerns about children. (p. 569).

Implications of change. As Haggerty (1974) pointed out, "these problems are not problems we can deal with alone, they will lead us into team care" (p. 547). Although the rise of modern technology initially enhanced the physicians' status (Starr, 1982), it also made it difficult for them to maintain a well-rounded grasp of matters considered unequivocally medical, much less to grasp the breadth of other fields (Staum & Larsen, 1981). Discussion of the effect of the development of interdisciplinary teams ranged from the suggestion that physicians had lost their position of dominance (Blishen, 1969) to the position that "physicians have come to recognize and accept the vital contributions of allied health professionals" (Florian & Sacks, 1985).

Regardless of the level of acceptance of the team approach, physicians must turn to other health care professions to provide total patient care (Kissick, 1968). This shift from dominance to team player has not necessarily come easily. Physicians have been forced to come to grips with the invasion of their territory by numerous other professions and the realization that the day of the physician being all things to all people has come to an end (Saunders, 1978). This adjustment is made more difficult by the fact that medical training has not

kept pace with this changing role of the physician (Bearden, 1973; Fischler, 1983). Information on the nonmedical aspects of child development and on the allied health professions involved with child development is limited (Lloyd, 1976; Tjossem, 1976). Browder (1981) points out that the literature dealing with research and delivery models of infant stimulation programs is often in nonmedical journals, therefore physicians are unfamiliar with the types and efficacy of programs.

The physician as diagnostician

Tjossem (1976) stated that "physicians are accustomed to the establishment of firm diagnoses before proceeding to treatment" (p. 8). In a study of physician attitudes toward early intervention, Esposito (1978) reported that "many physicians preferred to be certain that abnormal signs suggesting a disorder were unmistakable and persistent before initiating treatment" (p. 164). Fischler & Tancer (1984) also found that a "disturbing number of physicians" (p. 87) choose to wait for children to outgrow developmental problems. In a study conducted by Adams (1982), over 25% of respondents indicated they would advise parents to wait until a child was older before seeking services. This practice is consistent with the physician's role of gatekeeper. In the area of developmental disorders, however, several

factors interfere with the probability of a physician making a timely diagnosis.

Physicians have minimal exposure to nonmedical aspects of child development (Lloyd, 1976; Tjossem, 1976). Shea & Fowler (1983) determined that, although physicians were more knowledgeable than parents about normal and disordered development, they displayed a significant number of "common misconceptions". Further, early diagnosis of a developmental disorder such as a speech-language disorder is often difficult. Carrow (1972) stated that "The difficulty is inherent in the nature of the language learning process which requires man to integrate complex physiological and psychological systems with a complex linguistic system" (p. 52). Weiss and Lillywhite (1981) noted that a thorough assessment of language required perceptiveness, caution, time and considerable training. Bergman, Probstfield and Wedgewood (1967) reported that an average of ten minutes was spent on child health visits. This short time, coupled with the fact that the child is likely to be ill, suggest that the physician would have little opportunity to collect the data to diagnosis a developmental disorder. Two other factors add to the difficulty of diagnosis. As several authors suggest, it is the milder, more subtle conditions that go undiagnosed (Casey, Bradley, Caldwell & Edwards, 1986; Tjossem, 1976). A

delay in achieving milestones does not necessarily indicate abnormality (Baird, & Hall, 1985; Mahood, 1981).

Hence the physician perception of his responsibility to diagnose before referring is not conducive to the optimal management of developmental disorders. Lack of knowledge of developmental disorders and diagnostic methods, time constraints and the inadequacy of conclusive evidence of a disorder are all factors that interfere with a physician's ability to make a definitive diagnosis.

Implications. The major consequence of this belief in the need for a diagnosis before referral is the "wait and see" attitude (Esposito, 1978; Frankenburg, 1984). Applying this model of action to developmental disorders may result in a treatment and management program of "concerned neglect" (Tjossem, 1976). Lloyd (1976) stated that, if we are to talk of early intervention, the major focus must be on the infant. Intervention directed at three to five year olds is late intervention and the more likely result of intervention tied to diagnosis.

This delay in identification and referral of developmental disorders may also have a negative effect on the parent-physician relationship. Although primarily a well-meaning attempt to spare parents anxiety or to comfort the parent until assessment can be performed (Illingworth & Illingworth, 1984), this wait and see

attitude may lead to anger and confusion in the parent. Parents of handicapped children indicated two areas of concern regarding their physicians: failure to detect problems early and failure to offer appropriate information on diagnosis and referral (Fischler & Tancer, 1984; Piper, 1982)..

Physicians and the rehabilitation professions

Several authors suggested that other health care professions are moving into the territory once held by physicians (e.g. Blishen, 1969; Browder, 1981). Browder (1981) stated that this may be due to the physician's failure to keep abreast of developmental diagnosis, referral and management. As Cubelli (1970) pointed out, however, "the possibility has always been remote that one individual professional person . . . could provide directly for all the client's needs" (p. 200). In this discussion of preschool children and developmental disorders, the rehabilitative disciplines of Occupational Therapy, Physical Therapy and Speech-Language Pathology are particularly relevant. Physician respect for and knowledge of these professions and their role in early intervention of developmental disorders necessarily impacts on the appropriateness of physician referral or nonreferral of his young patients.

Few articles were found that discussed physician knowledge of these allied health professions. Physician perception of physical therapy was the most prominent. In a survey of a group of Arkansas physicians, Dunkel (1974) reported that the quality of performance of physical therapists was well respected. Physicians suggested, however, that the skills of interpersonal relations, communication, and decision making were areas in need of improvement. Dunkel (1974) concluded that "a large majority of responding physicians believed they did not know enough about physical therapy services" (p. 586). A survey of California physicians was conducted (Silva, Clark & Raymond, 1981). These researchers directed their questions toward the attitude of physicians to the professional image of physical therapists. Although "the majority of responding physicians viewed physical therapists as possessing all of the criteria denoting professionalism", positive response was low with regard to the "two criteria representing the highest degree of professionalism" (p. 1152). This group of physicians viewed physical therapists as least likely to possess evaluative skills and autonomy of judgement. Harrison (1976) determined that registered nurses, medical students, orthopedists, internists and paediatricians were aware of procedures requiring little skill on the part of the physical

therapists but less aware of evaluative procedures and specialized treatment techniques. Uili, Shepard & Savinar (1984) proposed that knowledge and attitudes of physicians toward physical therapy would affect their utilization of physical therapy services. Through a survey of 600 physicians in three medical specialities they determined that "respondents preferred a prescriptive relationship when referring patients . . . and they most often selected 'technical' procedures . . . rather than 'professional' procedures" (p. 1523). Their conclusion--encompassing a review of the literature and their findings--was that "physicians perceive and utilize physical therapists primarily as technicians rather than professional colleagues" (p. 1528). Their study did not resolve the question of the relationship between physician knowledge of physical therapy and utilization.

Investigation of physician knowledge and opinions of occupational therapy was limited to two articles. Bearden (1973) examined the literature to "identify environmental forces which affect the practice of medicine and occupational therapy" (p. 64). The conclusion was that the medical emphasis on acute illness, diagnosis and cure interfered with the likelihood of physicians referring patients appropriately. In a more recent study (Florian & Sacks, 1985) physicians were asked to indicate their reasons for

patient referral to occupational therapy units. Interpretation of the results revealed that physicians referred patients "mainly for reasons involving the patients' capacity to express their skills and abilities and succeed in practical experience" (p. 325). The authors saw this as an appropriate, but limited, expectation of occupational therapy.

A search of the literature provided only two studies of physician knowledge of speech therapy--one in the United States and one in England. In England Lesser and Hassip (1986) compared the responses of qualified teachers, doctors and nurses with students in these professions. The focus of the questionnaire was on the nature of the education and work of speech therapists as well as knowledge and opinions about speech disorders. Physicians reported receiving from zero to five hours of education about speech disorders. Their beliefs about the prevalence of speech-language disorders and the percentages of individuals who could benefit from speech therapy were fairly accurate. Their suggested youngest age for referral (2 years) was in concurrence with the speech therapists' recommendation. The majority of physicians listed stuttering, laryngectomy, cleft palate and deafness as the primary disorders with which speech therapists are involved. Advising other professions, alternative communication and training students were the

main types of work physicians rated as important in the speech therapy profession. These researchers concluded that these physicians were relatively well informed about speech therapy. Through a survey contracted by the American Speech and Hearing Association (Burson-Marsteller Public Information Survey, 1987) 400 physicians were interviewed by telephone. This sample included 100 each of paediatricians, family physicians, neurologists and otolaryngologists. Nearly 80% of the 400 reported referring patients to speech-language pathologists, with family physicians reporting a much lower referral rate than the other physicians. The majority of physicians would refer patients with articulation, language and stuttering disorders to speech-language pathologists. A child who was not talking would also be referred to a speech-language pathologist, although it was not clear what age of child was being discussed. Nearly all of the physicians reported satisfaction with the quality of services provided by speech-language pathologists. This positive evaluation was based on the quality of results obtained for their patients. Furthermore, most of these physicians believed that speech-language pathologists were adequately trained.

Summary

Minimal investigation of physician knowledge of the rehabilitation professions has been undertaken. Studies in all three disciplines determined that physicians respect the work of these professionals. This positive regard, however, was based on limited knowledge of the range of activities engaged in by these professions. The incentive for these investigations stemmed from the perception that patients who would benefit from rehabilitation services were not being referred. It was suggested by researchers in all three professions that increased knowledge would likely increase utilization.

Role of Parent

There existed in the literature some disagreement as to the accuracy of parental reports. The discussion focused on two types of parental reports: (1) report of developmental history, and (2) report of a child's current abilities. Hart, Bax & Jenkins (1978) reported that parental recall of developmental history was indeed unreliable. On the other hand, studies of parental descriptions of their child's current abilities were accurate (e.g. Baird & Hall, 1985; Coplan, 1982; Frankenburg, Camp, VanNatta, Demersseman, & Voorhees, 1975; Knobloch, Stevens, Malone, Ellison,& Risemberg, 1979). These same authors pointed out that parental

awareness of their child's abilities does not necessarily mean an understanding of the significance of the observation. There was agreement, however, on the role parental concern should play. A family physician suggested that "If there is ever any parental concern . . . the child should be sent for proper testing at once" (Gibson, 1985, p. 60). Baird and Hall (1985) in discussing the skills a pediatrician needs to detect developmental disorders advised that "many abnormalities can be detected by listening to parents" (p. 581). Finally, a statement from a group of parents of handicapped children pointed out that "no doubt a layman's diagnosis is simply a layman's diagnosis, but we suggest to you that it has tremendous value" (p. 767).

Knowledge of Community

The role of physician knowledge of community agencies and referral processes in influencing referrals of developmentally delayed children to non-physician specialists has received little attention. In a discussion of what should be taught in developmental paediatrics, Baird & Hall (1985) stated that the physician should know what services the parents can reasonably expect and when, how, and to whom a referral should be made. Bernheimer, Scully, Baldwin & Rowley (1982) reviewed the case method approach to teaching

community agency referrals to medical students. They indicated that a physician's knowledge about a community agency may come through direct communication or through a patient's positive experience. Either source, in their opinion, would enhance the likelihood that the physician would refer other patients to that resource.

Summary of Literature Review

Several conclusions can be drawn from this review of the literature. Despite several methodological considerations and a wide variation in the reported prevalence estimates, it would appear that speech and language disorders constitute a significant problem for preschool children. Early detection and intervention would be warranted. The literature on the evaluation of the effectiveness of early intervention was generally supportive of such programs. A variety of treatment methods for speech-language disorders were shown to be effective, although samples were small and generalization was not often demonstrated. The prevailing opinion from the literature is synthesized in the statement by Eisenberg (1987) that "it should be justification enough for our efforts if they improve the quality of life in the here and now of our patients" (p. 420).

The referral process and identification of variables that may enhance or deter referral were also

investigated. Physician referral to other physicians has been the subject of considerable research, with patient variables being the most common focus. Physician referral to nonphysicians has received only minimal attention. It was concluded that physicians lacked knowledge of the areas of competency of the rehabilitation professions. Finally, it was considered likely that traditional medical training and expectations interfered with patient referral. The perception on the part of the rehabilitation professions was that many patients who would benefit from their services were not being referred.

Chapter III

METHODOLOGY

The purpose of this chapter is to describe the methodology used in this study. The design of the study, subject selection, and development and testing of the questionnaire are discussed. Strategies employed to enhance response rate and a description of the follow-up procedures are also included. The statistical methods are presented, followed by a description of the assumptions and limitations of this study.

Design

To fulfill the goal and objectives of this study, it was necessary to identify two groups of physicians. A design was selected which separated and then compared two groups of physicians through the combination of their responses to a case study and two Likert scale questions. The areas chosen for comparison focused on physicians' use of non-clinical indicators of speech-language status and their beliefs about the benefits of speech-language therapy for preschool children.

Subjects

The target population was the general and family practitioners in the City of Edmonton. The sampling

frame was a list of all general and family practitioners registered with the College of Physicians and Surgeons in the City of Edmonton. Approximately 750 general and family practitioners were listed. Physicians who had retired before May 30, 1988 were excluded, reducing the list to 693.

Sample size. The population of general and family practitioners in the City of Edmonton was regarded as a finite population because the number of individuals thus described was limited (Raj, 1968). The cost of surveying all 693 practitioners was prohibitive so an appropriate sample size was calculated. The formula for calculation of sample size from a finite population (Raj, 1968) required identifying the target population (N=693) and estimating the proportion of physicians in that population who refer. The proportion of physicians practicing in the City of Edmonton who are likely to refer a child for speech-language services was not known so this figure was set at 50% (p=.5) to allow the most generous calculation of sample size (Mendenhall, Ott & Scheaffer, 1971). An error level of 10% (e=.1) was considered to be appropriate as the goal of the

---

$$n = \frac{(p)\ (1-p)}{\frac{e2}{z} + \frac{p(1-p)}{N}}$$

questionnaire was to look at general trends and opinions of physicians rather than more specific data. Further, if an error level of 5% was used, the required sample size increased to a prohibitive level. The Z score (Z=1.96; p=.05) was selected to assure that the results were accurate 95% of the time. The required sample size was calculated to be 46. A further adjustment was required to account for the expected response. Several authors (Berk, 1985; Shosteck & Fairweather, 1979) suggested the response rate from a questionnaire of physicians would average 40%. Hence, it was concluded that a total of 115 physicians should be surveyed to generate the required sample size. Ten additional respondents were selected to serve as replacements as required.

Sample selection. The selection of the 125 subjects (115=sample, 10=replacements) from the total population of 693 was accomplished by systematic sampling. The total sample requirement (125) was divided into the total number of units in the population to be surveyed (693) to arrive at a skip interval of six.

Using a Table of Random Numbers, a number between one and six was selected (04) as the starting case. Beginning with the fourth name on the list, every sixth case was then selected. From the 125, every twelth case was set aside for use as a replacement.

Questionnaire design

A 24 item questionnaire (Appendix A) was designed for written completion. The intention of the questionnaire was to: (a) separate physicians who are most likely to refer a child for speech-language services when in doubt about the child's speech-language status from physicians unlikely to refer when in doubt; (b) determine whether or not physicians who are most likely to refer differ from physicians who are least likely to refer in their responses to nineteen statements directed at issues that might influence referral practices; (c) determine if type of medical practice, place of training and year of graduation influence referral practices. The statements were randomly ordered.

The questionnaire was composed of a case study and 23 statements. In the case study a situation was described, and respondents were asked to indicate with a check which of two actions best reflected how they would handle the situation. Twenty-one of the statements were to be responded to on a Likert-type scale. The five point scale ranged from "strongly agree" through "uncertain" to "strongly disagree". Eleven separate issues were targeted. For nine of these, two statements were used to address each issue: One statement was posed in the positive (e.g. speech-language pathologists do .);

The second statement was posed in the negative (e.g. speech-language pathologists do not . . .). The statements were worded such that if an individual responded 'agree' to one statement, the other statement would require a 'disagree' response. The other three topics were investigated with one statement each. The final two statements required only a check mark in the appropriate box.

Pre-Test and Pilot Study. The questionnaire was pre-tested in three stages. The first version was administered to practicing speech-language pathologists at the Edmonton Board of Health. The feedback from this group confirmed that the issues targeted in the questionnaire were consistent with their experience as practicing clinicians. As a result of this meeting, two additional issues were added to the questionnaire, and some wording was clarified.

The revised version was then presented to the physicians at the Edmonton Board of Health. The physicians completed the questionnaire and discussed their impressions and concerns. Any response that differed from the expected response was questioned; physicians' clarification of their interpretation of several statements enhanced content validity. Average completion time was observed to be six minutes. From

this meeting several statements were reworded, and the instructions were refined.

A pilot study of the questionnaire was then conducted with ten randomly selected physicians who were representative of the sample to be surveyed. The cover letter (Appendix B) contained a statement of the purpose of the study and an explanation that this was a pretest. Respondents were asked to mark any items found ambiguous or questionable. The questionnaire was hand delivered to the receptionist with a verbal and written arrangement of a date and time for pickup. Eight of the ten physicians completed the questionnaire. One physician arranged for a brief meeting; a second physician spent considerable time writing detailed comments on the questionnaire. Four pairs of statements consistently were given similar answers, when it was expected that an "agree" with one would necessarily mean a "disagree" to the other. These statements were examined and rephrased. Face and content validity questions were thus addressed.

Strategies

A review of the literature suggested that physicians were a difficult group to questionnaire. Response rates were reported to range between 41% and 80% (Shosteck & Fairweather, 1979). Berk (1985) reported that response to the AMA's Periodic questionnaire of Physicians

to the AMA's Periodic questionnaire of Physicians declined from 80 percent in 1966 to 49 percent in 1977. Various strategies designed to enhance response rates were investigated. Six strategies were selected for use in this study: mailing a preletter (Childers & Skinner, 1979; Linsky, 1975), enclosure of a stamped, self-addressed return envelope (Gullahorn & Gullahorn, 1963), first class mailing, an offer to be sent the study results (Berdie, Andersen, & Niebuhr, 1986), two follow-up mailings (Nevin & Ford, 1976), and use of a veiled threat (Andrews, 1978; Berdie & et al., 1986). The veiled threat was the use of a code number on the questionnaire form with an explanation in the cover letter that it was there to facilitate follow-up and to prevent the respondent from receiving unnecessary reminder letters.

Questionnaire mailing

A preletter was mailed to 115 physicians in June, 1988. The preletter (Appendix C) contained a statement of the purpose of the study and an explanation of the physicians' role in speech-language referrals and thus the importance of physician input to the study. The preletter also contained an announcement of the date of arrival of the questionnaire and the suggestion that it

would take approximately six minutes to complete. Each letter was individually addressed and signed.

The questionnaire, with a cover letter (Appendix D), was mailed three days later. The cover letter announced the enclosure of the questionnaire and reminded the respondent that it should take approximately six minutes to complete. Also included was a brief explanation of how the results would be used. Respondents were provided with assurances of confidentiality and an explanation of the code number on the questionnaire form. A telephone number was also provided where the researcher could be contacted. Again each letter was individually addressed and signed. The cover letter, questionnaire form, and a stamped self-addressed envelope were placed in a standard white legal-sized envelope and were mailed first class.

From the initial mailing, one letter was returned marked "address unknown". A search of the telephone directory and a call to the College of Physicians and Surgeons did not produce a current address. A replacement subject was chosen, and a preletter, followed three days later by the questionnaire, was mailed.

Three weeks after the initial mailing, follow-up requests were mailed to the 46 subjects who had not returned their questionnaire form. Each request was individually addressed. A cover letter (Appendix E) advising the recipient that the conclusion of the study

was approaching and encouraging response, a second copy of the questionnaire form, and a stamped, self-addressed envelope were included.

A third mailing of a similar packet (Appendix F) was sent three weeks later to the remaining 34 nonrespondents.

Statistical Methods

It had been anticipated that responses to the case study and questions 20 and 21 would divide the respondents into two groups. However, three groups emerged. Thus, to determine if the groups differed in the way they responded to the survey statements, an analysis was required to test for differences among the means of three groups. A parametric test, such as analysis of variance, assumes the following: (1) subjects must be randomly selected, (2) sample size must be large, (3) groups must be independent, (4) distribution must be symmetrical, and (5) level of measurement must be interval or ratio (Kirk, 1968). In this study subjects were systematically selected with every physician having an equal chance of being selected and N was large (N=72). Subjects were assigned to one of three groups such that no subject could be a member of two different groups and all subjects had an equal opportunity of falling into any group. Computation of

means and medians for each group confirmed that distributions were symmetrical or very nearly so, on all dependent measures. Four of the five assumptions underlying the use of a parametric test were met. Except that an ordinal level of measurement characterized most of the survey statements, a comparison of means was justified. Based on this, the decision was made to use a one-way analysis of variance (ANOVA) (Stats Plus, 1982) on three groups in addressing objective 3 which was to determine if the groups differed with respect to their responses to the survey items. When an analysis of variance revealed a statistically signficant difference between the highest and the lowest means, it was followed by the Tukey HSD Test (Bruning & Kintz, 1977) to determine if other pairwise comparisons yielded significant differences.

Physicians in the Refer group were arranged by type of medical practice to determine the type of medical practice that had the largest number of physicians who were likely to refer (objective 4). A Contingency Coefficiency C was used to determine if there was a relationship between place of education in the Refer group and type of medical practice (objective 5). Objective 6, to determine if there was a relationship between tendency to refer and year of graduation, was answered by a Spearman Rank Correlation Coefficient.

Objective 7, to determine if physicians who generally refer when uncertain of a medical diagnosis are more likely to refer or not to refer when uncertain of a speech-language disorder, was not achieved. In statement 22, respondents were asked to indicate "yes" or "no" if generally, when they were unsure about a diagnosis they would refer to the appropriate specialist. All respondents answered yes.

Assumptions and Limitations

Assumptions. An assumption underlying this study was that general practitioners and family physicians were the primary physician groups identifying and referring children for speech-language services. Further, it was assumed that physicians would continue to be one of the main referral mechanisms, and thus the effectiveness of the system was linked to their beliefs and practices.

Limitations. The subjects of this study were a systematic sample of general and family practitioners in the City of Edmonton. Paediatricians, the second largest referral group, were not included. Paediatricians were excluded because they were more likely to deal with children with obvious or suspected disabilities. Hence the need for a referral would be more apparent. In this study the focus was on physician practices when the

status of the child's speech-language development was not clear.

Since physicians were divided into groups based on their responses to three items on the questionnaire, their designation as a physician likely to refer or a physician likely to wait and reassess was based on interpretation of their report, not on actual behavior. It was possible that physicians regarded the "refer" choice as the more socially appropriate one and selected it regardless of actual practice. Consequently, any differences found between the two groups must be interpreted with caution. Further, the questionnaire focused on only ten potential areas of difference between those who refer and those who do not refer. This was by no means meant to be all-inclusive.

Summary

In this chapter the study design and subject selection are explained. Methods used to develop and test a mail questionnaire were discussed. Strategies for mailing designed to enhance response rate were described. This was followed by an explanation of the statistical methods selected. A statement of the assumptions and limitations of this questionnaire was also provided.

Chapter IV

ANALYSIS AND RESULTS

The purpose of this chapter is to present the analyses and results of the survey. The first section is a discussion of the survey response rate and a description of the method used for grouping respondents. The analyses and results of each statement or set of statements from the questionnaire are then presented.

Survey Response Rate

Of the 115 questionnaires distributed, a total of 87 were returned representing an initial response rate of 77 percent. Six of the respondents returned the questionnaire uncompleted, noting that they did not have the population of interest in their caseload. Statement 16 functioned as an ineligibility criterion. Nine respondents were eliminated because they indicated, in response to statement 16, that they believed they were never unsure of a child's speech-language status. Because the questionnaire was directed at physicians who had experienced doubt about a child's speech-language status, these nine respondents were considered inappropriate. Thus, of the 115 questionnaires distributed, six were inappropriately selected, and nine were ineligible, leaving 100 possible respondents. The

remaining 72 usable returns represented a completion rate of 72 percent.

Respondent Grouping

The case study and the composite score from statements 20 and 21 were designed to separate physicians who were likely to refer when unsure of a child's speech-language status from physicians who were likely to take a wait and see approach. Physicians were first divided into groups based on their choice of (a) wait or (b) refer in response to the case study. Six physicians did not answer this question. The composite scores from statements 20 and 21 were then compared to the responses to the case study. Physicians who chose "(b) refer" in response to the case study and attained a composite score of 7, 8, 9 or 10 from statements 20 and 21 were placed in the Refer group. Physicians who chose "(a) wait" and scored 2, 3, 4 or 5 on statements 20 and 21 were placed in the Wait group. A third group, Uncertain, emerged. An shown in Table 3, this group was made up of those physicians who did not respond to the case study (5), those whose responses to the case study and the statements were at odds (7), and those who responded to statements 20 and 21 with the same answer (14). Of the 13 respondents in the Uncertain group who chose "(a) wait" in response to the case study, 6 (23%)

unequivocally agreed with the "refer" statement 21. Only one member of the Uncertain group (4%) moved from an initial response of "(b) refer" to an unequivocal agreement with the "wait" statement 20. A total of 14 (54%) of the respondents answered statements 20 and 21 with the same answer. Nineteen percent (5) of the members of the Uncertain group did not respond to the Case. As summarized in Table 3, 27% of the Uncertain group responded in an opposite manner to the statements directed at discovering what they would do when in doubt about a child's speech-language status: 73% did not clearly indicate a preference for either choice of action.

Table 3

PROFILE OF UNCERTAIN GROUP

% of total who moved from Wait to Refer	23% (6)
% of total who moved from Refer to Wait	4% (1)
% of total who responded to statements 20 and 21 with the same answer	54% (14)
% of total who did not answer the case	19% (5)
TOTAL	100% (26)

These three groups (Refer, Wait, Uncertain) constituted the independent variable. Out of the total usable responses, 39 (54%) were categorized as members of

the Refer group; 7 (10%) as members of the Wait group; and 26 (36%) as members of the Uncertain group.

Data Preparation

Responses to all Likert scale items were transformed to numerical scores. For the positive statements a choice of "strongly agree" became a score of five, "agree" became a four, "uncertain" a three, "disagree" a two, and "strongly disagree" a one. Scoring on the negative statements was reversed. When two statements were used to address one issue, the scores on the two statements were added together to provide a composite score for that issue.

Statement 16 functioned as a check. The questionnaire presupposed that physicians would face situations where they were unsure of a child's speech-language status. A "disagree" response to statement 16 indicated that the respondent believed there was never a circumstance when this was the case. Responses from physicians who indicated they were never unsure of a child's speech-language status were not included in the analysis. The purpose of the questionnaire was to compare physicians who were most likely to refer when in doubt about a child's speech-language status with physicians who were most likely to wait and reassess when in doubt. Hence,

physicians who believed they are never in doubt about a child's speech-language status were not appropriate subjects.

Analyses and Results of Survey Statements

Table 4 shows each group's mean score and median score for each issue addressed in the survey. The means and medians are remarkably similar across all variables indicating symmetry of their distributions. In Table 2 each dependent variable is identified by a code word and the number of the statement(s) on the survey that dealt with that issue. The code words are defined as follows: physician belief in speech-language pathologists' ability to work with very young children (AGE), physician understanding of the status of the waiting list (WLIST), physician regard for opinions of allied professionals, preschool teachers and day care workers (ALLIED), physician regard for the concerns of parents (PARENT), physician perception of the quality of their interactions with speech-language pathologists (POSITIVE), physician belief that the presence of a speech-language disorder must be ascertained before a referral is made (CERTAIN), physician belief that a speech-language sample is necessary to decide the need for a referral (SAMPLE), physician belief in own knowledge of where to refer

(WHERE), and physician belief that children will outgrow speech-language disorders (OUTGROW).

TABLE 4

MEANS AND MEDIANS OF DEPENDENT VARIABLES ACROSS GROUPS

ISSUE	STATEMENT(S)	REFER MEAN (MEDIAN)	UNCERTAIN MEAN (MEDIAN)	WAIT MEAN (MEDIAN)
AGE	1, 15	7.6 (8.0)	6.2 (6.0)	6.7 (7.0)
WLIST	3, 8	6.9 (7.0)	6.5 (6.0)	6.1 (6.0)
ALLIED	6, 12	8.1 (8.0)	8.0 (8.0)	8.1 (8.0)
PARENT	4, 9	7.6 (8.0)	7.2 (8.0)	6.6 (7.0)
POSITIVE	17	3.8 (4.0)	3.5 (4.0)	2.8 (3.0)
CERTAIN	7, 14	8.0 (8.0)	6.7 (6.0)	7.0 (7.0)
SAMPLE	10, 18	7.0 (7.0)	6.3 (6.0)	6.4 (6.0)
WHERE	2, 13	6.8 (8.0)	6.3 (6.0)	5.0 (5.0)
OUTGROW	19	2.7 (2.0)	2.5 (2.0)	2.4 (3.0)

AGE=physician belief in speech-language pathologists' ability to work with very young children.
WLIST=physician understanding of the status of the waiting list.
ALLIED=physician regard for opinions of allied professionals, preschool teachers and day care workers.
PARENT=physician regard for the concerns of parents.
POSITIVE=physician perception of the quality of their interactions with speech-language pathologists.
CERTAIN=physician belief that the presence of a speech-language disorder must be ascertained before a referral is made.
SAMPLE=physician belief that a speech-language sample is necessary to decide the need for a referral.

WHERE=physician belief in their knowledge of where to refer.
OUTGROW=physician belief that children will outgrow speech-language disorders.

Analysis of Variance

Two statements (1 and 15) were designed to determine physician beliefs about the ability of speech-language pathologists' to work with very young children. The analysis of variance shown in Table 5 revealed a statistically significant difference between physicians who refer and physicians who are uncertain. That is, the Refer group (M=7.64) reported a greater belief (p=.04) than the Uncertain group (M=6.27) that speech-language pathologists could work with very young children. The Tukey HSD Test did not detect any statistically significant differences between the scores of the Refer group and the Wait group nor between the scores of the Wait group and the Uncertain group. These results suggested that physicians in the Refer group had more knowledge about the ability of speech-language pathologists to work with very young children than did physicians in the Uncertain group.

TABLE 5
ANALYSIS OF VARIANCE: AGE OF CHILD

GROUP	N	MEAN	S.D.
REFER	39	7.64	1.09
UNCERTAIN	26	6.27	1.89
WAIT	7	6.71	1.11

SOURCE	DF	SUM SQUARES	MEAN SQUARE	F	P-VALUE
Between Groups	2	14.	7.10	3.46	.0359
Within Groups	69	141.52	2.05		

POST HOC: TUKEY HSD TEST
Critical Difference = 1.2786
(*=Significant at .05)

Refer vs Uncertain	=	1.37*
Refer vs Wait	=	.93
Wait vs Uncertain	=	.44

Statements 3 and 8 were designed to determine physician understanding of the status of the waiting list. The analysis of variance shown in Table 6 indicated that the differences among the mean scores of the three groups were not statistically significant. These results suggested that there was no difference among the physicians who Refer, the physicians who Wait and the physicians who are Uncertain with regard to their understanding of the status of the waiting list.

TABLE 6
ANALYSIS OF VARIANCE: STATUS OF WAITING LIST

GROUP	N	MEAN	S.D.
REFER	39	6.97	1.11
UNCERTAIN	26	6.50	1.07
WAIT	7	6.14	.90

SOURCE	DF	SUM SQUARES	MEAN SQUARE	F	P-VALUE
Between Groups	2	5.04	2.52	2.17	.1205
Within Groups	69	80.33	1.16		

The value physicians placed on the opinions of allied professionals, preschool teachers and day care workers was addressed by statements 6 and 12. The analysis of variance shown in Table 7 indicated that the differences among the mean scores of the three groups were not statistically significant. These results suggested that the physicians in the Refer, Wait and Uncertain groups did not differ in the value they placed on the opinions of allied professionals, preschool teachers and day care workers.

TABLE 7
ANALYSIS OF VARIANCE: OPINIONS OF ALLIED PROFESSIONALS

GROUP	N	MEAN	S.D.
REFER	39	8.15	1.29
UNCERTAIN	26	8.08	1.32
WAIT	7	8.14	.38

SOURCE	DF	SUM SQUARES	MEAN SQUARE	F	P-VALUE
Between Groups	2	.05	.03	.02	--
Within Groups	69	107.78	1.56		

The value physicians placed on the concerns of parents was addressed by statements 4 and 9. The analysis of variance shown in Table 8 indicated that differences among the mean scores of the three groups were not statistically significant. These results suggested that the physicians in the Refer, Wait and Uncertain groups did not differ in the value they placed on the concerns of parents.

TABLE 8
ANALYSIS OF VARIANCE: CONCERNS OF PARENTS

GROUP	N	MEAN	S.D.
REFER	39	7.62	1.21
UNCERTAIN	26	7.27	1.34
WAIT	7	6.57	1.72

SOURCE	DF	SUM SQUARES	MEAN SQUARE	F	P-VALUE
Between Groups	2	8.20	4.10	2.40	.0969
Within Groups	69	118.06	1.71		

One statement (17) was designed to determine physician perception of the quality of their interactions with speech-language pathologists. The analysis of variance shown in Table 9 revealed a statistically significant difference between physicians who refer and physicians who wait. That is, the Refer group (M=3.85) reported a greater perception (p=.001) than the Wait group (M=2.86) that their interactions with speech-language pathologists were positive. The Tukey HSD Test revealed an additional difference between physicians who were uncertain and physicians who wait. That is, the Uncertain group (M=3.58) reported a greater perception (p=.05) than the Wait group (M=2.86) that their interactions with speech-language pathologists were positive. The difference in mean scores between the Refer group and the Uncertain group was not statistically significant. These results suggested that physicians in the Refer group and physicians in the Uncertain group perceived their interactions with speech-language pathologists to be more positive than did physicians in the Wait group.

TABLE 9
ANALYSIS OF VARIANCE: QUALITY OF INTERACTION

GROUP	N	MEAN	S.D.
REFER	39	3.85	.59
UNCERTAIN	26	3.58	.81
WAIT	7	2.86	.90

SOURCE	DF	SUM SQUARES	MEAN SQUARE	F	P-VALUE
Between Groups	2	7.58	3.79	7.63	.001
Within Groups	69	34.28	.50		

POST HOC: TUKEY HSD TEST
Critical Difference = .63146
(* = Significant at .05)

Refer vs Wait	=	.99*
Refer vs Uncertain	=	.27
Uncertain vs Wait	=	.72*

The belief that the presence of a speech-language disorder must be ascertained before making a referral was addressed by statements 7 and 14. The analysis of variance shown in Table 10 revealed a statistically significant difference between physicians who refer and physicians who are uncertain. That is, the Refer group (M=8.03) reported a greater belief (p=.0454) than the Uncertain group (M=6.77) in the need to be sure a speech-language disorder existed before making a referral. This finding was contrary to expectation; it had been anticipated that physicians who refer would report less of a belief in the need to be sure a speech-language disorder existed before making a referral. The Tukey HSD Test revealed an additional

difference between physicians who refer and physicians who wait. That is, the Refer group (M=8.03) reported a greater belief (p=.05) than the Wait group (M=7.00) in the need to be sure a speech-language disorder existed before making a referral. The difference between the scores of the Wait group and the Uncertain group was not statistically significant. These results suggested that physicians in the Refer group reported a greater belief in the need to be sure a speech-language disorder existed before making a referral than did physicians in the Uncertain group. Physicians in the Uncertain group reported a greater belief than did physicians in the Wait group.

TABLE 10
ANALYSIS OF VARIANCE: BE CERTAIN OF DISORDER

GROUP	N	MEAN	S.D.
REFER	39	8.03	1.37
UNCERTAIN	26	6.77	1.56
WAIT	7	7.00	1.15

SOURCE	DF	SUM SQUARES	MEAN SQUARE	F	P-VALUE
Between Groups	2	12.97	6.48	3.20	.0454
Within Groups	69	139.59	2.02		

POST HOC: TUKEY HSD TEST
Critical Difference = .97825
(*=Significant at .05)

Refer vs Uncertain	=	1.26*
Refer vs Wait	=	1.03*
Wait vs Uncertain	=	.23

Statements 10 and 18 were designed to determine if physicians believed a speech-language sample was necessary to decide the need for a referral. The analysis of variance shown in Table 11 did not reveal a statistically significant difference among the mean scores of the three groups. These results suggested that the physicians in the Refer, Wait and Uncertain groups did not differ with regard to their beliefs about the need to base a referral on a speech-language sample.

TABLE 11
ANALYSIS OF VARIANCE: NEED FOR SPEECH SAMPLE

GROUP	N	MEAN	S.D.
REFER	39	7.15	1.00
UNCERTAIN	26	6.35	.98
WAIT	7	6.43	1.81

SOURCE	DF	SUM SQUARES	MEAN SQUARE	F	P-VALUE
Between Groups	2	5.73	2.86	2.39	.0974
Within Groups	69	82.68	1.20		

Physician belief in their knowledge of where to refer was addressed through statements 2 and 13. The analysis of variance shown in Table 12 revealed a statistically significant difference between physicians who refer and physicians who wait. That is, the Refer group ($\underline{M}$=6.77) reported a greater belief ($\underline{p}$=.0377) than the Wait group ($\underline{M}$=5) that they knew where to refer for speech-language services. The Tukey HSD Test did not

detect a significant difference between the scores of the Refer group and the Uncertain group nor between the scores of the Uncertain group and the Wait group. These results suggested that physicians in the Refer group believed they had more knowledge of where to refer than did physicians in the Wait group.

TABLE 12
ANALYSIS OF VARIANCE: WHERE TO REFER

GROUP	N	MEAN	S.D.
REFER	39	6.77	1.95
UNCERTAIN	26	6.27	1.95
WAIT	7	5.00	.82

SOURCE	DF	SUM SQUARES	MEAN SQUARE	F	P-VALUE
Between Groups	2	24.12	12.06	3.41	.0377
Within Groups	69	244.04	3.54		

POST HOC: TUKEY HSD TEST
Critical Difference = 1.6802
(* = Significant at .05)

Refer vs Wait	= 1.77 *
Refer vs Uncertain	= .50
Uncertain vs Wait	= 1.27

Statement 19 was designed to determine if physicians believed a child was likely to outgrow a speech-language problem by age three or four. The analysis of variance shown in Table 13 did not reveal a statistically significant difference among the mean scores of the three groups. These results suggested that physicians in the three groups did not differ in their beliefs about the

likelihood of a child outgrowing a speech-language disorder.

TABLE 13
ANALYSIS OF VARIANCE: WILL OUTGROW DISORDER

GROUP	N	MEAN	S.D.
REFER	39	2.74	.94
UNCERTAIN	26	2.46	.81
WAIT	7	2.43	.53

SOURCE	DF	SUM SQUARES	MEAN SQUARE	F	P-VALUE
Between Groups	2	.87	.43	.58	--
Within Groups	69	51.61	.75		

Statements 5 and 11 were designed to determine physician beliefs about the availability of speech-language services. The analysis of variance shown in Table 14 did not reveal any statistically significant difference among the mean scores of the three groups. These results suggested that physicians in the three groups did not differ in their beliefs about the availability of speech-language services.

TABLE 14
ANALYSIS OF VARIANCE: AVAILABILITY

GROUP	N	MEAN	S.D.
REFER	39	2.74	.94
UNCERTAIN	26	2.46	.81
WAIT	7	2.43	.53

SOURCE	DF	SUM SQUARES	MEAN SQUARE	F	P-VALUE
Between Groups	2	.87	.43	.58	--
Within Groups	69	51.61	.75		

Physicians were also asked to indicate their type of medical practice. Of the total respondents, 32 (44%) indicated they practiced in a group setting, 19 (26%) were in solo practice, and 13 (18%) practiced solo in a clinic setting. The remaining 8 (12%) indicated they practiced in a walk-in clinic or some other arrangement not specified (Table 15). Within the Refer group (n=39) 16 (41%) indicated they practiced in a group setting, 14 (36%) were in solo practice and 7 (18%) practiced solo in a clinic setting. The remaining 2 (5%) indicated they practiced in a walk-in clinic. These results suggested that solo and group practices contained the largest number of physicians who were likely to refer. The type of practice of physicians in the Refer group was quite similar to the type of practice of all respondents.

TABLE 15
TYPE OF PRACTICE OF ALL RESPONDENTS
AND OF PHYSICIANS WHO REFER

Type of Practice	All Respondents	Physicians who Refer
Solo	19 (26%)	14 (36%)
Group	32 (44%)	16 (41%)
Solo in Clinic	13 (18%)	7 (18%)
Walk-in	6 (8%)	2 (5%)
Other	2 (3%)	0 (0%)

A Contingency Coefficient C, a measure of the extent of association between two sets of nominal level data (Siegel, 1956), was conducted to determine if there was a

relationship between place of education and type of medical practice (objective 5). The extent of the association was computed to be .56. This was not significant (Chi Square =18.28; df = 8).

A Spearman Rank Correlation Coefficient, a measure of association between two variables of at least ordinal scale (Siegel, 1956), was conducted to determine if there was a relationship between tendency to refer and year of graduation (objective 6). The extent of the association (Rho = .0811) was not significant.

The data did not allow an answer to objective 7 which was to determine if physicians who generally refer when uncertain of a diagnosis are more likely to refer or not to refer when uncertain of a speech-language disorder. All physicians responded to this statment with the same answer.

Summary

The results of the analyses of the responses to this survey were presented in this chapter. Of the 87 questionnaires that were returned, 72 were considered usable, representing a completion rate of 72%. These respondents fell into three groups; Refer (54%); Uncertain (36%); and Wait (10%). A statistically significant difference among group responses was found on the issues of (1) physicians' knowledge of the ability of

speech-language pathologists to work with very young children, (2) physicians' belief in their knowledge of where to refer, (3) physicians' belief in the need to be sure a speech-language problem exists before making a referral, and (4) physicians' perception of the quality of their interaction with speech-language pathologists.

Seventy-seven percent of the physicians in the Refer group indicated they practiced in either a solo or a group setting. There was no relationship between year of graduation and tendency to refer nor between place of education and tendency to refer.

The following chapter presents the conclusions and recommendations resulting from these findings.

Chapter V

CONCLUSIONS AND RECOMMENDATIONS

In this chapter, a summary of the study is presented, conclusions drawn from the data analyses are discussed, and recommendations are offered.

Summary of the Study

Physicians play a pivotal role in the attainment of speech-language services for preschoolers in the City of Edmonton. Hence, any physician beliefs or practices that could delay or deter a speech-language referral would act as a barrier to the timely receipt of services. There has been limited research on physician beliefs about and understanding of the speech-language profession and its practices.

A review of the literature revealed several areas where traditional medical training, experience and beliefs could be incompatible with early referral of a suspected speech-language disorder. Evidence of the value of early intervention was reviewed, and studies of the prevalence of speech-language disorders were examined to provide further support for this investigation.

In this study physicians were surveyed to determine their beliefs on a variety of issues pertinent to the decision to initiate a referral. A questionnaire was

developed, pretested and mailed to a systematically selected sample of general practitioners in the City of Edmonton. A total of 72 usable questionnaires were returned representing a completion rate of 72 percent.

The results of the analyses of the survey and discussion of each point are presented in the following section.

Results and Discussion

1. Physicians who indicated they would most likely refer a child for a speech-language assessment if they were in doubt about the child's speech-language status represented 54 percent of the respondents, (the Refer group).

This was a somewhat surprising finding as this group was larger than anticipated. It would seem logical that physicians would be more likely to wait and reassess when in doubt about a child's speech-language status. It is possible that the clinical perception of speech-language pathologists is skewed by the experience of treating children at a later age than is desirable. When consulted about a very young child, physicians may be more inclined to initially believe that a speech-language problem does not exist or is only temporary. When the child turns three or four and the problem still exists,

the physician may then feel doubt and refer. It may also be that physicians interpreted the "refer" choice as the more socially acceptable response and thus were more inclined to select it.

2. Physicians who indicated they would most likely wait and reassess a child whose speech-language status was in doubt represented 10 percent of the respondents, (the Wait group).

This is a much smaller group than would be expected based on the clinical experience of speech-language pathologists. Again, it may be that the "wait and reassess" answer was perceived as the less acceptable choice.

3. Physicians whose answers to the questions about what they would do when in doubt about a child's speech language status were incompatable or inconsistent represented 36 percent of the respondents, (the Uncertain group).

Although the appearance of this third group was not anticipated, its existence was not surprising. The questions on the survey forced physicians to choose "refer" or "wait" when faced with a child whose speech-language status was unclear. In practice physicians probably weigh many more factors and make a

decision based on the individual case. Sixty-two percent of the physicians in the Uncertain group answered "agree" to both the statement that ". . . when in doubt I would refer" and ". . . when in doubt I would wait and reassess". This finding may suggest that these physicians consider either option acceptable but require further information.

Thirty-six percent of the respondents appeared to be indecisive about what they would do when unsure of a child's speech-language status. If this were representative of the practicing physicians in the City of Edmonton, it suggests that 250 physicians in the city would not have a firm position for referral or reassessment. These physicians might benefit from specific guidelines about when a referral is warranted. They may also require feedback from speech-language pathologists advising them when a referral they've made has been appropriate.

4. Physicians in the Refer group were significantly more likely to report the knowledge that speech-language pathologists could work with very young children than were physicians in the Uncertain group. There was no difference between the Refer group and the Wait group, nor between the Uncertain group and the Wait group.

Knowing that speech-language pathologists can and do work with very young children is important, if a physician is to make a timely referral. It is curious that the scores of the Wait group were not significantly different from the Refer group because the clinical experience of speech-language pathologists would suggest that many of the "wait and reassess" decisions are based on the child's age. Hence one would expect that the Wait group would have had less knowledge on this issue than the Refer group. The Wait group was relatively small (n=7) and the difference (.93) between the scores of the Refer group and the Wait group was quite close to the critical difference (C.diff=1.27) which was calculated for the Tukey HSD Test (Bruning & Kintz, 1977). Perhaps a larger sample would have yielded a significant difference between the Refer group and the Wait group.

5. There were no differences among the three groups on physicians' reported understanding of the type of services a child may receive before being placed on a waiting list.

The mean scores were midrange suggesting an indecisiveness about the process that results in a child being placed on a waiting list. Waiting lists for speech-language services for preschoolers tend to be long, with an average wait of three months to one year,

depending on the institution and the severity of the disorder. Most of the service agencies assess the child, establish a priority rating, and counsel the parent before placing the child on the waiting list. If the physician were unaware of this process, he might believe that three months to one year pass before any contact is made with his patient. If the physician has any doubt as to the need for a speech-language referral, he may choose to delay the referral until he is more sure, as he may believe that "nothing will happen anyway" for three months to a year.

It would appear that it would be beneficial for physicians to be advised of the process that leads to placement of a patient on a waiting list.

6. The mean scores of all three groups did not differ with regard to the value they place on the opinions of allied professionals, preschool teachers and day care workers.

The mean score of eight for all three groups suggested a high regard for the opinions of allied professionals, preschool teachers and day care workers. This is encouraging as these professionals are likely to be in a position to observe a child's speech-language performance and advise the parent of any concerns. Providing them with guidelines for early detection of

speech-language disorders should act to enhance the likelihood of early referral.

7. The three groups also did not differ in their reported regard for the concerns of parents as a basis for referral.

The mean scores suggested a high regard for the concerns of parents as a basis for referral. The experience of speech-language professionals would suggest that physicians in the Wait group would score lower than physicians in the Refer group. This lack of difference may suggest that, although physicians are willing to refer on the basis of parental concern, parental concern may not be a prominent factor in the decision-making process. That is, parents may be less aware than physicians of the need for referral, or parents may wonder if a referral is necessary but not raise the issue unless the physician does. Emphasis on parental education of normal and abnormal speech-language development may help parents determine if their child requires a speech-language referral. Parents may also benefit from encouragement to take the initiative to request a referral if they have any concerns. Several authors have pointed out that parental descriptions of their child's abilities are usually accurate, although this does not necessarily mean the parent understands the

significance of the observation (Baird & Hall, 1985; Coplan, 1982; Frankenburg, Camp, VanNatta, Demersseman, & Voorhees, 1975; Knobloch, Stevens, Malone, Ellixon, & Risemberg, 1979).

8. Physicians in the Refer group and physicians in the Uncertain group reported a greater positive perception of the quality of their interactions with speech-language pathologists than did physicians in the Wait group.

The experience of speech-language professionals would sugggest that physicians who were most likely to refer would tend to have had more positive interactions with speech-language pathologists than physicians who were most likely to wait and reassess. It may be that the lack of positive interactions perceived by the Wait group results in the choice of wait and reassess. It is presumed that the physicians in the Refer group perceived the quality of their interactions as positive because of direct interaction with speech-language pathologists. This perception may also have related to the benefit patients derived from referrals.

9. Physicians in the Refer group reported a greater belief in the need to be sure a speech-language

disorder existed before making a referral than did physicians in the other two groups.

It would seem logical that physicians in the Refer group would report less need to be sure of the existence of a speech-language disorder than would physicians in the Wait group. The need to be sure of a disorder, one might expect, would delay referral as follow-up visits or reassessments are carried out. However, it may be that physicians in the Refer group generally were more knowledgeable about speech-language disorders and thus able to make a diagnosis more easily, or, they may have had a broader definition of what constitutes a speech-language disorder such that the decision was easier. That is, it may have been easier for them to believe they were certain a disorder existed.

10. There were no differences among the three groups in their belief in the necessity of having a speech-language sample on which to base a referral.

It would seem logical that physicians who refer would have less need to base a referral on a — speech-language sample than would physicians who wait. The need for a speech-language sample would suggest the belief that a diagnosis was required before referral. If this were the case, referral would be delayed. The mean

scores of all three groups were slightly above midrange suggesting only a moderate belief that a speech-language sample was not necessary. This response probably reflects practicality as well as belief, in that it is often difficult to get a small child to talk. Some confusion may have arisen from the term "speech-language sample". For example, a physician may have considered parental report of a child's speech-language performance as a speech-language sample.

This finding also suggests that providing physicians with a check-list of speech-language development may not be practical. If physicians do not regularly collect a speech-language sample, they have little or no data to apply the check-list to. It may be more advantageous to impress upon physicians that if they, a parent or an allied professional questions any aspect of a child's speech-language development, the child should be referred to a speech-language pathologist.

11. Physicians in the Refer group indicated a greater belief in their knowledge of where to refer than did physicians in the Wait group. Physicians in the Uncertain group also indicated a greater belief in their knowledge of where to refer than did physicians in the Wait group.

This is an important finding. It seems reasonable that knowledge of where to refer would make referral easier. If physicians have specific knowledge of the service institutions and the type of client they treat, their referrals will be more accurate. Parents, in particular, will be spared the frustration and wasted time of following up on a referral from one institution to another. Institutions might do well to advise physicians of the services they offer and the types of clients with which they deal. It might also be helpful to physicians if a contact person were identified. A physician who wondered about the need for a referral or the appropriateness of his patient would then have easy access to the needed information.

12. There was no difference between the three groups in their reported belief that a child is likely to outgrow a speech-language disorder.

It would seem logical that physicians in the Refer group would be less likely to believe that a child would outgrow a speech-language disorder. The mean scores across the three groups indicated unequivocally that these respondents believed a child was likely to outgrow a speech-language disorder. Eighty-two percent of the total respondents chose either 'agree' (58%) or 'uncertain' (24%) in response to statement 19. If these

responses reflect reality, then physicians may regularly delay referrals in order to observe a child over time.

One difficulty with this questionnaire item is that speech-language disorder was left undefined. Many young children exhibit speech-language behaviors that appear to be disordered but are part of the developmental process. In that case a physician would be correct to expect that the child would outgrow the disorder.

13. The three groups of physicians did not differ in their perception of the availability of speech-language services.

The mean score of seven for all three groups indicated a belief that there are not enough speech-language services in the City of Edmonton. It would seem logical that physicians in the Wait group would be more likely to believe that there were not enough speech-language services available and that this would interfere with referral. It would appear that a belief that there are not enough speech-language services did not play a role in physicians' decision to refer.

14. A relationship was shown to exist between physician type of medical practice and tendency to refer. Within the Refer group (n=39) 41 percent indicated

they practiced in a group setting; 36 percent were in solo practice.

Information and public relations work might be directed toward physicians in solo practice in a clinic (18% of the Refer group) and those in walk-in clinics (5% of the Refer group).

15. No relationship was found between tendency to refer and year of graduation.

Year of graduation was broken into four groupings: 0-7 years post graduation, 8-15 years, 16-24 years and over 25 years. Respondents in the Refer group fell quite uniformly into these four groups. This suggested that, if information obtained during medical training had any effect on tendency to refer, then little has changed over the years. Respondents who graduated over 25 years ago were no more or less likely to refer than were respondents who graduated 0 to 7 years ago.

16. No relationship was found between referring physicians' place of education and their type of medical practice.

If a parent reports having difficulty obtaining a referral for speech-language services, a speech-language pathologist may advise the parent to approach a physician

in a walk-in clinic. The belief among speech-language pathologists is that physicians in walk-in clinics are more likely to provide a referral on request. The belief also exists that physicians in walk-in clinics are more likely to have been trained outside North America and probably have received limited information about speech-language disorders. Thus the decision for referral would not likely be based on clinical knowledge or assessment. Within the Refer group, no relationship was found between place of education and type of medical practice.

Conclusions

The overall response rate of 76 percent and the completion rate of 72 percent were both higher than the anticipated response rate of 40 percent. This may indicate that respondents were interested in the study and concerned about speech-language services. It would appear also that the strategies employed--use of a preletter, enclosure of a stamped, self-addressed return envelope, first class mailing, an offer to be sent the study results, two follow-up mailings, and the use of a veiled threat acted to enhance response rate.

One might conclude that physicians will respond to a mail survey in adequate numbers if the topic is salient and if certain strategies are employed.

The existence of the Uncertain group suggests that a significant portion of the respondents (36%) did not have a specific position on what they would do if they were unsure of a child's speech-language status. This implies that there are factors other than the doubt about the child's ability that would sway the physician to refer or to wait and reassess. The Uncertain group differed significantly from the Refer group on only two issues, the knowledge that speech-language pathologists can work with very young children, and the belief that a physician must be sure a speech-language disorder exists before referring. Twenty-three percent of the Uncertain group changed their initial choice of "wait" to a choice of "refer" at the end of the questionnaire. This suggests that the provision of information about speech-language disorders, practices, and referral procedures may increase the likelihood of referrals.

Physicians in the Refer group differed significantly from physicians in the Wait group in their responses to three of the ten issues, a greater perception of their interaction with speech-language pathologists as being positive, a greater perception that they know where to refer, and, a greater belief in the need to be certain of the existence of a speech-language disorder before initiating a referral.

It is evident that the respondents in general would benefit from information on some specific areas. They appeared not to be aware that a child and the child's family receive services before the child is placed on the waiting list. Notification of the process a patient has gone through might reduce the perception that "nothing happens for six to eight months". Respondents also indicated they believed that a child was likely to outgrow a speech-language disorder. Although in some cases they may be correct, physicians might benefit from information about the proportion of children likely to fall into this group, the process a speech-language pathologist would follow when considering such a child, and the advantages of referring the child immediately. Respondent belief that there are insufficient speech-language services in the City of Edmonton may reflect their perception of the delay between referral and initiation of treatment.

It appeared from this investigation that these respondents had a high regard for the opinion of allied professionals, day care workers and preschool teachers. The close interaction between these professionals and preschoolers and their parents places them in an important position for detection of speech-language disorders. Any endeavors that would enhance the ability of allied professionals, day care workers and preschool

teachers to detect speech-language disorders should increase referrals of young children. Respondents also reported a high regard for parental concern. It may be that a referral will be granted if a parent requests one. Parents may require reassurance that their perceptions of their child's abilities are usually accurate and that any concerns they may have are valid. Respondents indicated that a speech-language sample was not necessary to determine the need for a referral. If this was the case, then knowledge of the child's abilities must come from the parent, and/or an allied professional, daycare worker or preschool teacher.

Recommendations

Institutions which provide speech-language services, should:

1. Provide physicians with information about the type of speech-language disorders dealt with in order to facilitate appropriate referrals.
2. Consider designating a contact person who would be known to physicians and available to answer questions and provide guidance regarding referrals.
3. Advise physicians of the process that is followed when a referral is received. This could take the form of a general step-by-step procedure as well as a specific report on each patient.

Members of the speech-language profession, through their professional organization, should:

1. Endeavor to maintain and enhance the relationship between physicians and speech-language pathologists.
2. Update physicians regularly on recent developments in speech-language pathology. Speech-language research is not reported in medical journals and thus physicians have little access to information about the abilities and activities of the profession. Articles in medical journals and/or periodic publication of a newsletter could provide physicians with information on such issues as optimal age of referral, indicators of speech-language disorders, and, guidelines for the decision to refer.
3. Develop educational programs directed at allied professionals, day care workers, preschool teachers and parents. These should include indicators of speech-language disorders, information about the variety of disorders speech-language pathologists treat, a description of the referral process, and a list of agencies and the types of clients each agency can treat.
4. Lobby medical schools to increase the amount of speech-language information provided to medical students.
5. Investigate the possibility of taking part in the medical continuing education program.

6. Investigate the ratio of speech-language pathologists to population in the City of Edmonton to determine if indeed there is a shortage of services.

Suggestions for Future Research

The following suggestions for future research are offered:

1. Contact the physicians who responded to this survey to determine their reasons for responding. This would provide an indication of why the response rate in this survey was much greater than expected. This information would then be useful in planning future speech-language surveys of physicians. It may also provide physicians with an opportunity to express their concerns.
2. Repeat this study, modifying the design to allow the grouping of physicians to be based on behavior instead of self-report. This would provide a test of the validity of the survey instrument and of the findings of this study.
3. Determine the factors that physicians believe they weigh in making a decision to refer a child for speech-language services. Knowledge of the factors that physicians believe are important in determining the need for a referral would provide information on how a decision might be influenced. This could result in an increase in the referrals of young children.

4. Determine why the Refer group chooses to refer despite the belief that children outgrow speech-language disorders. Knowledge of the reasons why a physician chooses to refer may provide an indication of the information other physicians would require to also make the decision to refer. Again, the result could be an increase in referrals of young children.

5. Determine if physician perception of a positive interaction with speech-language pathologists is based on direct interaction, patient benefit, or a combination of these factors. This would provide direction for enhancing the relationship between physicians and speech-language pathologists.

6. Determine if physicians' reported high regard for the opinions of allied professionals, daycare workers and preschool teachers is constant or if it carries more or less weight as other factors are varied. This knowledge would clarify the role these groups could play in enhancing the likelihood of referral.

7. Determine under what circumstances parental concern would result in a referral. This knowledge would clarify for parents, and for physicians, the role that parents can play in accessing treatment.

REFERENCES

Accardo, P. J., & Capute, A. J. (Eds.). (1979). The pediatrician and the developmentally delayed child. Monographs in Developmental Pediatrics, 2.

Adams, G. L. (1982). Referral advice given by physicians. Mental Retardation, 20, 17-22.

Adler, S. (Ed.). (1986). Early identification and intensive remediation of language retarded children. Springfield: Charles C. Thomas.

Andrews, H. A. (1978). The effect of personalization and veiled threat prompting techniques on non-respondents. Unpublished manuscript, University of Alberta, Edmonton.

Baird, G., & Hall, D. M. B. (1985). Developmental paediatrics in primary care: What should we teach? British Medical Journal, 291, 579-586.

Bax, M., & Hart, H. (1976). Health needs of preschool children. Archives of Disease in Childhood, 51, 848-852.

Bearden, F. M. (1973). Occupational therapy and intern collaboration. The American Journal of Occupational Therapy, 27, 64-69.

Beckwith, L. (1971). Relationships between attributes of mothers and their infants' IQ scores. Child Development, 42 1083-1087.

Beitchman, J. H., Nair, R., Clegg, M., & Patal, P. G. (1986). Prevalence of speech and language disorders in 5 year-old kindergarten children in the Ottawa-Carleton region. Journal of Speech and Hearing Disorders, 51, 98-110.

Berdie, D. R., Andersen, J. F., & Neibuhr, M. A. (1986). Questionnaires: Design and Use. Metuchen, N.J.: The Scarecrow Press Inc.

Bergman, A., Probstfield, J. L., & Wedgewood, R. J. (1967). Performance analysis in pediatric practice. Journal of Medical Education, 42, 249-252.

Berk, M. L. (1985). Interviewing physicians: The effect of improved response rate. American Journal of Public Health, 75, 1338-1340.

Bernheimer, E., Scully, T. J., Baldwin, D. C., & Rowley, B. D. (1982). Teaching community agency referral to medical students: The case method approach. Pediatrics, 57, 718-719.

Blishen, B. R. (1969). Doctors and doctrines: The ideology of medical care in Canada, Toronto, Ont.: University of Toronto Press.

Boone, D. R. (1987). Human Communication and its Disorders. Englewood Cliffs: Prentice-Hall Inc.

Brock, C. (1977). Consultation and referral patterns of family physicians. The Journal of Family Practice, 4, 1129-1134.

Brogan, D. R. (1981). Rehabilitation service needs: Physicians' perceptions and referrals. Archives of Physical Medicine and Rehabilitation, 62, 215-219.

Browder, J. A. (1981). The pediatrician's orientation to infant stimulation programs. Pediatrics, 67, 42-44.

Bruning, J. L. & Kintz, B. L. (1977). Computational handbook of statistics. Glenview, Ill.: Scott, Foresman & Company.

Bryant, G. (1986). Preventive health care for preschool children or health surveillance. Child: Care, Health and Development, 12, 195-206.

Bryant, D. M., & Ramey, C. T. (1987). An analysis of early intervention programs for environmentally at-risk children. In M. J. Guralnick & F. C. Bennett (Eds.), The effectiveness of early intervention for at-risk and handicapped children (pp. 33-78). Orlando: Academic Press, Inc.

Burson-Marsteller public information survey. (1987). ASHA, 21-23.

Carrier, J. K. (1970). A program of articulation therapy administered by mothers. Journal of Speech and Hearing Disorders, 35, 344-353.

Carrow, E. (1972). Assessment of speech and language in children. In J. E. McLean, D. E. Yoder, & R. L. Schiefelbusch (Eds.). Language intervention with the retarded: Developing strategies (pp. 52-88). Baltimore: University Park Press.

Carson, N. E. (1982). The referral process. The Medical Journal of Australia, 2, 180-182.

Casey, P. H., Bradley, R. H., Caldwell, B. M., & Edwards, D. R. (1986). Developmental intervention: A pediatric clinical review. In E. R. Christophersen, J. W. Finney, & P. C. Firman (Eds.), The Pediatric Clinics of North America (pp. 899-923). Phildelphia: W. B. Saunders Company.

Childers, T. L. & Skinner, S. J. (1979). Gaining respondent cooperation in mail surveys through prior commitment. Public Opinion Quarterly, 43, 558-561.

Christensen, M., & Hanson, M. (1981). An investigation of the efficacy of oral myofunctional therapy as a precursor to articulation therapy for pre-first

grade children. Journal of Speech and Hearing Disorders, 46, 160-165.

City of Edmonton Census. (1987).

Coburn, D., Torrance, G. M., & Kaufert, J. M. (1983). Medical dominance in Canada in historical perspective: The rise and fall of medicine? International Journal of Health Services, 13, 407-431.

Committee on standards of child health care. (1977). Evanston: American Academy of Pediatrics.

Connolly, K. (1972). Learning and the concept of critical periods in infancy. Developmental Medicine and Child Neurology, 14, 705-714.

Cooper, J., Moodley, M., & Reynell, J. (1979). The developmental language programme. Results from a five year study. British Journal of Disorders of Communication, 14, 57-69.

Coplan, J. (1982). Parental estimate of child's developmental level in a high-risk population. American Journal of Diseases of Children, 136, 101-104.

Costello, E. J. (1986). Primary care pediatrics and child psychopathology: A review of diagnostic, treatment, and referral practices. Pediatrics 78 1044-1051.

Costello, J., & Bosler, S. (1976). Generalization and articulation instruction. Journal of Speech and Hearing Disorders, 41, 359-373.

Costello, J., & Onstine, J. (1976). The modification of multiple articulation errors based on distinctive feature theory. Journal of Speech and Hearing Disorders, 41, 199-215.

Crystal, D. (1973). Linguistic mythology and the first year of life. British Journal of Communication Disorders, 8, 29-36.

Cubelli, G. E. (1970). Some dynamics of the referral process. Rehabilitation Literature, 31, 200-202.

Culatta, B., & Horn, D. (1982). A program for achieving generalization of grammatical rules to spontaneous discourse. Journal of Speech and Hearing Disorders, 47, 174-180.

Cummins, R. O., Jarman, B., & White, P. M. (1981). Do general practitioners have different "referral thresholds"? British Medical Journal, 282, 1037-1039.

Da la cruz, F. F. (1976). Pediatric care and training: A paradox? In T. D. Tjossem (Ed.), Intervention strategies for high risk infants and young children (pp. 689-702).

Dale, P. S. (1976). Language development: Structure and function. New York: Hold, Rinehart and Winston.

Day, P., & Klein, R. (1986). Controlling the gatekeepers: The accountability of general practitioners. Journal of the Royal College of General Practitioners, 284, 129-130.

Donabedian, A. (1972). Models for organizing the delivery of personal health services and criteria for evaluating them. Milbank Memorial Fund Quarterly, 50(4), Supplement, 103-154.

Drillien, C. & Drummond, M. (1983). Development screening and the child with special needs: A population study of 5000 children. Philadelphia: J. B. Lippincott Co.

Dunkel, R. H. (1974). Survey of attitudes of Arkansas physicians and physical therapists toward professional capacity of physical therapists. Physical Therapy, 54, 584-587.

Dworkin, P. H., Shonkoff, J. P., Leviton, A., & Levine, E. (1979). Training in developmental pediatrics: How practitioners perceive the gap. American Journal of Diseases of Children, 133, 709-712.

Eisenberg, L. (1987). Preventive pediatrics: The promise and the peril. Pediatrics, 80, 415-421.

Elliott, L. L. (1978). Epidemiology of hearing impairment and other communicative disorders. In B. S. Schoenberg (Ed.), Advances in Neurology, 19, 399-420.

Enderby, P., & Phillipp, R. (1986). Speech and language handicap: Towards knowing the size of the problem. British Journal of Disorders of Communication, 21, 151-165.

Esposito, R. R. (1978). Physicians' attitudes toward early intervention. Physical Therapy, 58, 160-167.

Fischler, R.. S. (1983). Teaching child development and behavior to family practice residents. Journal of Family Practice, 16, 571-579.

Fischler, R. S., & Tancer, M. (1984). The primary physician's role in care for developmentally handicapped children. The Journal of Family Practice, 18, 85-88.

Fitzhardinge, P. M., & Ramsay, M. (1973). The improving outlook for the small prematurely born infant. Developmental Medicine and Child Neurology 15, 447-459.

Florian, V. & Sacks, D. (1985). Reasons for patient referral to occupational therapy units by health care professionals. Journal of Allied Health, 14, 317-326.

Frankenburg, W. K. (1984). Developmental screening. Primary Care: Clinics in Office Practice, 11, 535-547.

Frankenburg, W. K., Camp, B. W., VanNatta, P. A., Demersseman, J. A., & Voorhees, S. F. (1975). Reliability and stability of the Denver developmental screening test. Child Development, 42, 1315-1325.

Geyman, J. P., Brown, T. C., & Rivers, K. (1976). Referrals in family practice: A comparative study by geographic region and practice setting. The Journal of Family Practice, 3, 163-167.

Gibson, G. C. (1985). The role of the family physician--a front line view. Ear and Hearing, 6, 59-60.

Glascoe, F. P. & VanDervoort, R. L. (1985). The developmental screening and referral practices of physicians in Tennessee. Journal of the Tennessee Medical Association, 3, 141-147.

Goodman, J. F. & Cecil, H. S. (1987). Referral practices and attitudes of pediatricians toward young mentally retarded children. Journal of Developmental and Behavioral Pediatrics, 8, 97-105.

Gottlieb, M. I., & Williams, J. E. (Eds.). (1987). Textbook of Developmental Pediatrics. New York: Plenum Medical Book Company.

Gullahorn, J. E. & Gullahorn, J. T. (1963). An investigation of the effects of three factors on response to mail questionnaires. Public Opinion Quarterly, 27, 294-296.

Guralnick, M. J. (1982). Pediatrics and special education. Exceptional Children, 48, 297-301.

Guralnick, M. J., & Bennett, F. C. (1987). A framework for early intervention. In M. J. Guralnick & F. C. Bennett (Eds.), The effectiveness of early intervention for at-risk and handicapped children (pp. 3-29). Orlando: Academic Press, Inc..

Haggerty, R. J. (1974). The changing role of the pediatrician in child health care. American Journal of Diseases of Children, 127, 545-548.

Harrison, P. J. (1976). Relationship between knowledge and utilization of physical therapy. Physical Therapy, 56, 1151-1159.

Hart, H. , Bax, M., & Jenkins, S. (1978). The value of a developmental history. Developmental Medicine and Child Neurology, 20, 442-452.

Hassard, G. H., & LeBlanc, J. H. (1972). Referral of patients with communicative disorders. Southern Medical Journal, 65 103-106.

Haynes, U. B. (1976). The national collaborative infant project. In T. D. Tjossem (Ed.), Intervention strategies for high risk infants and young children (pp. 509-534).

Hedge, M. N., & Gierut, J. (1979). The operant training and generalization of pronouns and a verb form in a language delayed child. Journal of Communication Disorders, 12, 23-34.

Hedge, M. N., Noll, M. J., & Pecora, R. (1979). A study of some factors affecting generalization of language training. Journal of Speech and Hearing Disorders, 44, 301-320.

Hester, E. J. (1981). Speech-language services as a component of child health programs. ASHA, 23, 569-575.

Hines, R. M., & Curry, D. J. (1978). The consultation process and physician satisfaction: Review of referral pratterns in three urban family practice units. Canadian Medical Association Journal, 118, 1065-1073.

Horton, K. B. (1976). Early intervention for hearing-impaired infants and young children. In T. D. Tjossem (Ed.), Intervention strategies for high risk infants and young children (pp.371-381).

Hovind, H., & Parving, A. (1987). Detection of hearing impairment in early childhood. Scandinavian Audiology, 16 187-193.

Illingworth, C. M., & Illingworth, R. S. (1984). Mothers are easily worried. Archives of Diseases in Childhood, 59 380-384.

Kirk, R. E. (1968). Experimental design: Procedures for the behavioral sciences. Belmont, Cal.: Brooks/Cole Publishing Company.

Kissick, W. L. (1968). Health manpower in transitions. The Milbank Memorial Fund Quarterly: Supplement, 46, 53-90.

Knobloch, H., Stevens, F., Malone, A., Ellison, P., & Risemberg, H. (1979). The validity of parental reporting of infant development. Pediatrics, 63, 872-878.

Kupperman, P., Bligh, S., & Goodban, M. (1980). Activating articulation skills through theraplay. Journal of Speech and Hearing Disorders, 45 540-548.

Lagergven, J. (1970). Motor handicapped children: A study from a Swedish county. Developmental Medicine and Child Neurology 12, 56-63.

Landman, G. B. (1986). Preventing school failure: The physiciaan as child advocate. Pediatric Clinics of North America 33, 935-953.

Leske, M. C. (1981). Prevalence estimates of communicative disorders in the U.S. ASHA, 28, 217-225.

Lesser, R., & Hassip, S. (1986). Knowledge and opinions of speech therapy teachers, doctors and nurses. Child: Care, Health and Development, 12, 235-249.

Linsky, A. S. (1975). Stimulating responses to mailed questionnaires: A review. Public Opinion Quarterly, 39, 82-101.

Lloyd, L. L. (Ed.). (1976). Communication Assessment and Intervention Strategies. Baltimore: University Park Press.

Lloyd, L. L. (1976). Discussant's comments: Language and communication aspects. In T. D. Tjossem (Ed.). Intervention strategies for high risk infants and young children (pp. 187-1998). Baltimore: University Park Press.

Ludke, R. L. (1982). An examination of the factors that influence patient referral decisions. Medical Care, 20, 782-796.

Mahood, J. A. (1981). Early identification of children with communication disorders. In Proceedings of the third symposium on the prevention of handicapping conditions of prenatal and perinatal origin. Alberta Social Services and Community Health.

Mendenhall, W., Ott, L., & Scheaffer, R. (1971). Elementary Survey Sampling. Belmont, Cal.: Wadsworth Publishing Company, Inc.

Metcalfe, D. H. H., & Sischy, D. (1974). Patterns of referral from family practice. The Journal of Family Practice, 1, 34-38.

Mussen, P. H. (1963). The Psychological Development of the Child. Englewood Cliffs, N.J.: Prentice-Hall, Inc.

Nadler, H. L. & Evans, W. J. (1987). The future of Pediatrics. American Journal of Diseases of Childhood, 141, 21-26.

Nevin, J. R. & Ford, N. M. (1976). Effects of a deadline and a veiled threat on mail survey responses. Journal of Applied Psychology, 61, 116-118.

Olswang, L., Bain, B., Dunn, C., & Cooper, J. (1983). The effect of stimulus variation on lexical learning. Journal of Speech and Hearing Disorders, 48, 192-201.

Palfrey, J. S., Singer, J. D., Walker, D. K., Butler, J. A. (1987). Early identification of children's special needs: A study in five metropolitan communities. The Journal of Pediatrics, 111, 651-659.

Penchansky, R. & Fox, D. (1970). Frequency of referral and patient characteristics. Medical Care, 8, 369-384.

Piper, M. P. (1982). A parent's perspective: Prevention or crisis intervention? Journal of Developmental and Behavioral Pediatrics, 3, 236-238.

Predy, G., & Meintzer, J. (1982). Communication disorders in children: The role of the family physician. Canadian Family Physician, 28, 981-984.

Provence, S. (1981). Family relationships and infant mental health disorders: Some issues and opportunities or prevention. In Proceedings of the Third Symposium on the Prevention of Handicapping Conditions of Prenatal and Perinatal Origin, (pp.241-274). Alberta Social Services and Community Health.

Raj, D. (1968). Sampling Theory. New York: McGraw-Hill Book Company.

Randall, D., Reynell, J., & Curwen, M. (1974). A study of language development in a sample of 3 year-old-children. British Journal of Disorders of Communication, 9, 3-16.

Roeher, G. A. (1963). Effective techniques in increasing response to mailed questionnaires. Public Opinion Quarterly, 27, 299-302.

Ruben, R. J. (1986). Unsolved issues around critical periods with emphasis on clinical application. Acta Oto-Laryngologica, S429, 61-64.

Ruder, K., & Bunce, B. (1981). Articulation therapy using distinctive feature analysis to structure the training program: Two case studies. Journal of Speech and Hearing Disorders, 46, 59-65.

Rutter, M. (1982). The long-term effects of early experience. Developmental Medicine and Child Neurology, 22, 800-815.

Saunders, T. C. (1978). Consultation-referral among physicians: Practice and process. The Journal of Family Practice, 6, 123-128.

Shea, V., & Fowler, M. G. (1983). Parental and pediatric trainee knowledge of development. Journal of Developmental and Behavioral Pediatrics, 4, 21-25.

Sheehan, J., Martyn, M., & Kilburn, K. (1968). Speech disorders in retardation. American Journal of Mental Deficiency, 73, 251-256.

Shelton, R. L., Johnson, A. F., Willis, V., & Arndt, W. B. (1975). Monitoring and reinforcement by parents as a means of automating articulation response: II. Study of preschool children. Perceptual and Motor Skills, 40, 599-610.

Shortell, S. M., & Anderson, O. W. (1971). The physician referral process: A theoretical perspective. Health Services Research, 6, 39-48.

Shosteck, H. & Fairweather, W. R. (1979). Physician response rates to mail and personal interview surveys. Public Opinion Quarterly, 43, 206-217.

Siegel, S. (1956). Nonparametric Statistics for the Behavioral Sciences. New York: McGraw-Hill Book Company.

Silva, P. A. (1980). The prevalence, stability and significance of developmental language delay in preschool children. Developmental Medicine and Child Neurology, 22, 768-777.

Silva, D. M., Clark, S. D., & Raymond, G. (1981). California physicians' professional image of physical therapists. Physical Therapy 61 1152-1157.

Simonsson, R. J., Cooper, D. H., & Scheiner, A. P. (1982). A review and analysis of the effectiveness of early intervention programs. Pediatrics, 69, 635-640.

Starr, P. (1982). The Social Transformation of American Medicine. New York: Basic Books, Inc.

Staum, M. S. & Larsen, D. E. (Eds.). (1981). Doctors, patients and society: Power and authority in medical care. Waterloo, Ont.: Wilfrid Laurier University Press for the Calgary Institute for the Humanities.

Stevenson, J. & Richman, N. (1976). The prevalence of language delay in a population of three-year-old children and its association with general retardation. Developmental Medicine and Child Neurology, 18 431-441.

Storch, J. (1982). Patients' rights: Ethical and legal issues in health care and nursing. Toronto: McGraw-Hill Ryerson Limited.

Tjossem, T. D., (1976). Early intervention: Issues and approaches. In T. D. Tjossem (Ed.) Intervention strategies for high risk infants and young children (pp. 3-33). Baltimore: University Park Press.

Tumoi, S., & Ivanoff, P. (1977). Incidence of speech and hearing disorders among kindergarten and grade one children. Special Educaiton in Canada, 51, 5-8.

Uili, R. M., Shepard, K. F., & Savinar, E. (1984). Physician knowledge and utilization of physical therapy procedures. Physical Therapy, 64, 1523-1529.

Warren, S. F., McQuarter, R. J., & Rogers-Warren, A. K. (1984). The effects of mands and models on the speech of unresponsive language-delayed preschool children. Journal of Speech and Hearing Disorders, 49 43-52.

Weiss, C. E., & Lillywhite, H. S. (1981). Communicative disorders: Prevention and early intervention. St. Louis: The C. V. Mosby Company.

Wilcox, M. J., & Leonard, L. B. (1978). Experimental acquisition of wh-questions in language-disordered children. Journal of Speech and Hearing Research 21, 220-239.

Williams, D. M., Darbyshire, J. O., & Vaghy, D. A. (1980). An epidemiological study of speech and hearing disorders. Journal of Otolaryngology: Supplement, 9, (7), 1-24.

Williams, T. F., White, K. L., Andrews, L. O., Diamond, E., Greenberg, B. G., Hamrick, A. A., & Hunter, E. A. (1960). Patient referral to a university clinic: Patterns in a rural state. American Journal of Public Health, 50, 1493-1507.

APPENDIX A

Questionnaire

on

Physician Speech-Language Referral Practices

SURVEY OF SPEECH-LANGUAGE REFERRAL PRACTICES

Please respond to all statements: Respond to each statement as it applies to your experience with PRESCHOOL children with NO HANDICAPPING CONDITION other than a possible speech-language problem.

CASE STUDY

A two-and-a-half-year-old child has just been placed in a foster home. The foster mother has brought the child to see you for a routine check-up. The only words the child uses in your presence are "mama", "hi" and "bye" despite your presentation of toys and books. The foster mother is unable to supply any information about the child's speech and language development. You are strongly suspicious that a speech-language disorder does exist.

Indicate with a check [✓] the statement which BEST reflects how you would handle the situation described above:

(a) Wait and see if the concerns still exist in six months time. [ ]

OR

(b) Arrange a referral to a speech-language pathologist. [ ]

Please indicate whether you STRONGLY AGREE, AGREE, are UNCERTAIN, DISAGREE or STRONGLY DISAGREE with the following statements by placing a check [✓] in the appropriate column.

	STRONGLY AGREE	AGREE	UNCERTAIN	DISAGREE	STRONGLY DISAGREE
1. Speech-language pathologists can assess receptive language and provide parental counselling with children as young as 12 months of age.	[ ]	[ ]	[ ]	[ ]	[ ]
2. When one of my preschool-age patients needs speech-language services, I know exactly where to refer.	[ ]	[ ]	[ ]	[ ]	[ ]
3. When I refer a child for speech-language services it is often 6 or 8 months before the speech-language pathologist makes contact with the family.	[ ]	[ ]	[ ]	[ ]	[ ]
4. If the parent is still concerned after my assessment and reassurance that there is no problem, I will refer a preschool child for a speech-language assessment.	[ ]	[ ]	[ ]	[ ]	[ ]
5. There are not enough speech-language pathologists in this city to provide the services needed.	[ ]	[ ]	[ ]	[ ]	[ ]
6. I would consider the opinion of an allied professional (eg. public health nurse), a day care worker or a preschool teacher an important component of my decision to make a speech-language referral.	[ ]	[ ]	[ ]	[ ]	[ ]
7. I like to be absolutely certain about the existence of a speech-language problem before I refer a preschool child for speech-language services.	[ ]	[ ]	[ ]	[ ]	[ ]
8. It is my understanding that when I refer a child for speech-language services, the speech-language pathologist sees the child for an assessment, establishes a priority rating and counsels the parent before the child is placed on a treatment waiting list.	[ ]	[ ]	[ ]	[ ]	[ ]

	STRONGLY AGREE	AGREE	UNCERTAIN	DISAGREE	STRONGLY DISAGREE
9. Parental concern should not be the basis on which a referral for speech-language services is decided.	[ ]	[ ]	[ ]	[ ]	[ ]
10. I often rely on factors other than a speech sample to decide the need for a speech-language referral.	[ ]	[ ]	[ ]	[ ]	[ ]
11. I have had no difficulty arranging for my patients to receive speech-language services.	[ ]	[ ]	[ ]	[ ]	[ ]
12. I would not normally put a great deal of weight on the recommendation of an allied professional (eg. public health nurse), a daycare worker or a preschool teacher in my decision to make a speech-language referral.	[ ]	[ ]	[ ]	[ ]	[ ]
13. It is difficult to know where to refer a preschool child for speech-language services.	[ ]	[ ]	[ ]	[ ]	[ ]
14. I would rather refer a preschool child who has normal speech and language than risk missing a child who has a communication disorder or delay.	[ ]	[ ]	[ ]	[ ]	[ ]
15. Speech-language pathologists can not do much for a child under two years of age.	[ ]	[ ]	[ ]	[ ]	[ ]
16. Occasionally I have been unsure whether or not a specific preschool child required speech-language services.	[ ]	[ ]	[ ]	[ ]	[ ]
17. I have had positive interactions with members of the speech-language pathology profession.	[ ]	[ ]	[ ]	[ ]	[ ]
18. It is on the basis of a child's speech-language sample that I make my decision about the need for a speech-language referral.	[ ]	[ ]	[ ]	[ ]	[ ]
19. Many children who seem to be delayed in their speech-language development will outgrow the delay by the age of three or four.	[ ]	[ ]	[ ]	[ ]	[ ]
20. If I have assessed a preschool child and am still not sure if the child has a speech-language disorder, I am most likely to reassess the child myself in six or eight months to determine if a referral to a speech-language pathologist is warranted.	[ ]	[ ]	[ ]	[ ]	[ ]
21. If, after assessment, I am still not sure if a preschool child has a speech-language disorder, I am most likely to arrange that the child be seen by a speech-language pathologist as soon as possible rather than wait to reassess the child myself at a later date.	[ ]	[ ]	[ ]	[ ]	[ ]

	YES	NO
22. Generally, if I am unsure about a diagnosis, I will refer to the appropriate specialist.	[ ]	[ ]

23. Please indicate the one term that best describes your practice:

solo	[ ]	walk-in clinic	[ ]
solo in a clinic setting	[ ]	other	[ ]
group (incl.partnership)	[ ]		

(please specify)

I would like to receive a copy of the results. [ ]

APPENDIX B

Cover Letter for Pretest of Questionnaire

University of Alberta
Edmonton
Canada T6G 2G3

Department of Health Services Administration
and Community Medicine
Faculty of Medicine

13-103 Clinical Sciences Building, Telephone (403) 432-6407

Department of Speech Pathology and
and Audiology 432-5990

June 7, 1988

Dr. . . . . .

Dear Dr. . . .

RE: SURVEY OF SPEECH-LANGUAGE REFERRAL PRACTICES

I am conducting a study of referral practices for speech-language services in the City of Edmonton. The purpose is to learn more about factors influencing referral practices.

To ascertain the appropriateness of survey items, I am asking you and nine other physicians to be the initial respondents. Please mark any items that you find questionable and suggest how they might be re-worked to constitute an explicit and credible survey.

Parents depend on physicians to determine the needs of their children; speech-language pathologists depend on physicians to identify and refer children who may benefit from their services. Your input to this study is vital to the formation of an accurate impression of referral practices.

Please complete this survey as soon as possible; it will take less than ten minutes of your time. I will return to your office on Tuesday, June 14, to pick it up. Should you have any questions or comments in the meantime, please contact me at 432-5990. I appreciate your time and cooperation and look forward to collecting the completed survey with your comments.

Sincerely,

Gay Sutherland, B.Sc., SLP, Reg (Alta)(c)
Speech-Language Pathologist
Graduate Student, Health Services
Administration

APPENDIX C

Preletter

University of Alberta
Edmonton
Canada T6G 2G3

Department of Health Services Administration
and Community Medicine
Faculty of Medicine
130
13-103 Clinical Sciences Building, Telephone (403) 432-6407

Department of Speech Pathology and
Audiology 432-5990

June 21, 1988

Dr. . . . . .

Dear Dr. . . .

RE: SURVEY OF SPEECH-LANGUAGE REFERRAL PRACTICES

I am conducting a study of referral practices for speech-language services in the City of Edmonton. The purpose is to learn more about factors influencing physician referral practices.

Parents depend on physicians to determine the needs of their children; speech-language pathologists depend on physicians to identify and refer the children who may benefit from their services.

In the next week you will receive a questionnaire designed to gather information regarding your referral practices and beliefs. The physicians involved in the pretesting found that it took less than ten minutes to complete. Your input to this study is vital to the formation of an accurate impression of referral practices. Please take a few moments to complete and return this questionnaire. Your prompt attention will be greatly appreciated.

Thank you for your time and cooperation.

Sincerely,

Gay Sutherland, B.Sc., SLP, Reg (Alta)(c)
Speech-Language Pathologist
Graduate Student, Health Services
Administration

APPENDIX D

Cover Letter

University of Alberta
Edmonton
Canada T6G 2G3

Department of Health Services Administration
and Community Medicine
Faculty of Medicine
13-103 Clinical Sciences Building, Telephone (403) 432-6407

Department of Speech Pathology and
Audiology 432-5990

June 23, 1988

Dr. . . . . .

Dear Dr. . . .

RE: SURVEY OF SPEECH-LANGUAGE REFERRAL PRACTICES

As you will recall from my letter of June 22, 1988, I am conducting a study of referral practices for speech-language services in the City of Edmonton. Enclosed is the survey, in which you are asked to respond to twenty-three statements. It will take approximately six minutes to complete. Please complete all sections.

The results of this study will be shared with institutions (such as the Edmonton Board of Health) that provide speech-language services to the City of Edmonton. This will allow these institutions an opportunity to modify or eliminate obstacles to referral. If you are interested in receiving an account of the results of this study, please indicate this on page two of the questionnaire.

You will notice a code number on your questionnaire. This code number will be used to facilitate follow-up and to prevent you from receiving unnecessary reminder letters. At no time will questionnaires be identified by respondent.

If you have any questions, please contact me at 432-5990. I appreciate your time and cooperation and look forward to receiving your completed questionnaire.

Sincerely,

Gay Sutherland, B.Sc., SLP, Reg (Alta)(c)
Speech-Language Pathologist
Graduate Student, Health Services
Administration

APPENDIX E

Cover Letter--First Follow-Up

University of Alberta
Edmonton

Department of Health Services Administration
and Community Medicine
Faculty of Medicine

Canada T6G 2G3

13-103 Clinical Sciences Building, Telephone (403) 432-6407

Department of Speech-Pathology and
Audiology 432-5990

July 15, 1988

Dr. . . . . .

Dear. Dr. . .

RE: SURVEY OF SPEECH-LANGUAGE REFERRAL PRACTICES

I am conducting the data-collection phase of my study on the speech-language referral practices in the City of Edmonton. As of this date, I have not received a completed questionnaire from you.

Perhaps you have been very busy, away, or have just forgotten or misplaced the questionnaire. Please take some time now to complete it. I have enclosed a second copy for your convenience.

If you have any questions or desire clarification, please contact me at 432-5990. Thank you for your time and cooperation. I look forward to receiving your completed questionnaire.

Sincerely,

Gay Sutherland, B.Sc.,SLP Reg (Alta)(c)
Speech-Language Pathologist
Graduate Student, Health Services
Administration

APPENDIX F

Cover Letter--Second Follow-Up

University of Alberta
Edmonton
Canada T6G 2G3

Department of Health Services Administration
and Community Medicine
Faculty of Medicine

136

13-103 Clinical Sciences Building, Telephone (403) 432-6407

Department of Speech-Pathology and
Audiology 432-5990

August 5, 1988

Dr. . . . . .

Dear Dr. . . .

RE: SURVEY OF SPEECH-LANGUAGE REFERRAL PRACTICES--REMINDER

As I mentioned in my letter of July 15, I am concluding the data collection phase of my study on speech-language referral practices in the City of Edmonton. As of this date, I have not received a completed survey form from you.

Perhaps you have been very busy, away, or have just forgotten or misplaced the form. Please take a few moments now to complete it. Your input to this study is vital to the formation of an accurate impression of referral practices. I have enclosed a copy for your convenience.

If you have any questions or desire clarification, please contact me at 432-5990. Thank you for your time and cooperation. I look forward to receiving your completed survey form.

Sincerely,

Gay Sutherland, B.Sc., SLP Reg (Alta)(c)
Speech-Language Pathologist
Graduate Student, Health Services
Administration